CONTRACT AWARD	STATE OF ALASKA HQ, STATE EQUIPMENT FLEET (Contracting Authority) 2200 E. 42nd Avenue Anchorage, Alaska 99508 (907-269-0800)	CONTRACT AWARD NUMBER 1606467

ORDERING DEPARTMENT	COMMODITY CODE	DATE OF CONTRACT
HEADQUARTERS, STATE EQUIPMENT FLEET 2200 E. 42ND AVENUE ANCHORAGE, ALASKA 99508		1/11/06
	NUMBER & PERIOD OF RENEWAL OPTIONS 3 YEAR	PR NO./DATE ASSIGNED
	DATE INITIAL CONTRACT BEGINS 1/11/06	DATE INTIAL CONTRACT ENDS 1/10/09

CONTRACTOR ADDRESS YUKON EQUIPMENT 2020 EAST THIRD AVENUE ANCHORAGE, AK 99501	GS VENDOR CODE:
	ISSUED IN ACCORDANCE WITH BID # SEF- 1055 DATED: 1/11/06
	PRICE ADJ. REQ. PRIOR TO EACH RENEWAL:
CONTACT NAME ROGER MORRIS	CPI/PPI BASE INDEX POINTS & MO/YR:
	REVIEW DATE: RENEWALS EXPIRE (MO/YR):
TELEPHONE NUMBER (907)277-1541	ESTIMATED VALUE OF INITAL TERM: REBID:

SEND INVOICES IN DUPLICATE TO: DOT&PF, STATE EQUIPMENT FLEET, 2200 E. 42ND AVENUE, ANCHORAGE AK 99508

NOTE: This order constitutes a binding commitment between the State and the contractor listed hereon. Unauthorized modification without the expressed prior approval of the contracting authority will result in a financial obligation on the contractor and/or unauthorized State personnel making the change.

DESCRIPTION

3-YEAR CONTRACT TO PURCHASE
AIP SNOW BLOWERS FOR ALASKA RURAL AIRPORTS

CONTRACTING OFFICER:

LYNDA SIMMONS
(907)269-0788

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CONTRACTING AUTHORITY NAME & TITLE	SIGNATURE
LYNDA SIMMONS, CONTRACTING OFFICER III	

TELEPHONE NO.: 907-269-0793 FAX NO.: 907-269-0801

IMPORTANT 1. Contract award number and ordering department name must appear on all invoices and documents relating to this order.
2. The State is registered for tax free transactions under Chapter 32, IRS Code Registration No. 92-601185. Items are for the exclusive use of the State and not for resale.

SECTION I

STANDARD TERMS AND CONDITIONS

1.0 ACCESSORIES: When accessories are supplied, they must be certified to be compatible with the rest of the equipment. Certification will be written evidence satisfactory to the State that the accessories are compatible. The contractor's failure to supply this evidence within the time required by the State will cause the State to consider the bid non-responsive and reject the contract.

2.0 ALTERATIONS: The contractor must obtain the written approval from the contracting officer prior to making any alterations to the specifications contained in this ITB. The State will not pay for alterations that are not approved in advance and in writing by the contracting officer.

3.0 AMENDMENTS: Contract terms shall not be waived, altered, modified, supplemented or amended without prior written approval of the Contracting Officer.

4.0 ASSIGNMENT: A contractor may not assign any portion of a contract unless authorized in advance and in writing by the Contracting Officer.

5.0 COMPLIANCE WITH ALL GOVERNMENT REGULATIONS: The contractor must comply with all applicable federal, state, and borough regulations, codes, and laws, and pay all applicable federal, state, and borough taxes, and is liable for all required insurance, licenses, permits, and bonds. Failure to comply with such requirements shall constitute a breach of contract and shall be grounds for contract cancellation. Damages or costs resulting from noncompliance shall be the sole responsibility of the contractor.

6.0 CONFLICT OF INTEREST: A person employed by the State of Alaska may not seek to acquire, be a party to, or possess a financial interest in, this contract if they are an employee of the administrative unit that supervises the award of this contract or they have the power to take or withhold official action to affect the contract.

7.0 CONTRACT PERIOD: From the date of award for three years (36 months). There are no options to renew.

8.0 DEFAULT: In case of contractor default, the State may procure the goods or services from another source and hold the contractor responsible for any resulting excess costs and may seek other remedies under law or equity. Alaska Statutes and Regulations provide for suspension and disbarment of non-responsible contractors.

9.0 DELIVERY: All deliveries shall be F.O.B. final destination point with all transportation and handling charges paid by the contractor. Responsibility and liability for loss or damage shall remain with contractor until final inspection and acceptance when responsibility shall pass to the State except as to latent defects, fraud and contractor's warranty obligations.

10.0 DISCONTINUED ITEMS: In the event an item is discontinued by the manufacturer during the life of the contract, another item may be substituted, provided that the Contracting Officer makes a written determination that it is equal or better than the discontinued item and provided that it is sold at the same price or less than the discontinued item.

11.0 DISPUTES: Any disputes arising out of this solicitation shall be resolved under the laws of Alaska. An appeal or any original action to enforce any provision of this agreement must be in the superior court for the First Judicial District of Alaska.

12.0 FORCE MAJEURE (Impossibility to perform): Neither party to this contract shall be held responsible for delay or default caused by acts of God and/or war, which is beyond that party's reasonable control. The State may terminate this contract upon written notice after determining such delay or default will reasonably prevent successful performance of the contract.

13.0 INDEMNIFICATION: The contractor shall indemnify, hold harmless, and defend the contracting agency from and against any claim of, or liability for error, omission or negligent act of the contractor under this agreement. The contractor shall not be required to indemnify the contracting agency for a claim of, or liability for, the independent negligence of the contracting agency. If there is a claim of, or liability for, the joint negligent error or omission of the contractor and the independent negligence of the contracting agency, the indemnification and hold harmless obligation shall be apportioned on a comparative fault basis. “Contractor” and “contracting agency”, as used within this and the following article, include the employees, agents and other contractors who are directly responsible, respectively, to each. The term “independent negligence” is negligence other than in the contracting agency’s selection, administration, monitoring, or controlling of the contractor and in approving or accepting the contractor’s work.

14.0 INSPECTIONS: Goods furnished under this contract are subject to inspection and test by the State at times and places determined by the State. If the State finds goods furnished to be incomplete or not in compliance with bid specifications, the State may reject the goods and require the contractor to either correct them without charge or deliver them at a reduced price, which is equitable under the circumstances. If the contractor is unable or refuses to correct such goods within a time deemed reasonable by the State, the State may cancel the order in whole or in part. Nothing in this paragraph shall adversely affect the State's rights as buyer, including all remedies and rights granted by Alaska statutes.

15.0 INSURANCE:

Without limiting the contractor's indemnification, it is agreed that the contractor shall purchase at its own expense and maintain in force at all times during the performance of services under this agreement the following policies of insurance. Where specific limits are shown, it is understood that they shall be the minimum acceptable limits. If the contractor's policy contains higher limits, the state shall be entitled to coverage to the extent of such higher limits. Certificates of Insurance must be furnished to the Contracting Officer prior to beginning work and must provide for a 30-day prior notice of cancellation, non-renewal or material change of conditions. Failure to furnish satisfactory evidence of insurance or lapse of the policy is a material breach of this contract and shall be grounds for termination of the contractor's services. All insurance policies shall comply with, and be issued by insurers licensed to transact the business of insurance under AS 21.

Proof of insurance is required for the following:

Workers' Compensation Insurance: The contractor shall provide and maintain, for all employees engaged in work under this contract, coverage

as required by AS 23.30.045, and; where applicable, any other statutory obligations including but not limited to Federal U.S.L. & H. and Jones Act requirements. The policy must waive subrogation against the State.

Commercial General Liability Insurance: covering all business premises and operations used by the contractor in the performance of services under this agreement with minimum coverage limits of $300,000 combined single limit per occurrence.

Commercial Automobile Liability Insurance: covering all vehicles used by the contractor in the performance of services under this agreement with minimum coverage limits of $300,000 combined single limit per occurrence.

Failure to supply satisfactory proof of insurance within the time required will cause the State to declare the contractor non-responsive and to reject the contract.

16.0 ITEM UPGRADES: The State reserves the right to accept upgrades to models on the basic contract when the upgrades improve the way the equipment operates or improve the accuracy of the equipment. Such upgraded items must be at the same price as the items in the basic contract.

17.0 NEW EQUIPMENT: Equipment offered must be new equipment. New equipment means equipment that is currently in production by the manufacturer and is still the latest model, edition or version generally offered. The equipment must be warranted as new by the manufacturer and may not have been used for any purpose, other than display (not demonstration), prior to its sale to the State. The State will not accept remanufactured, used or reconditioned equipment, including used or reconditioned components or parts of. It is the contractor's responsibility to ensure that each piece of equipment delivered to the State complies with this requirement. A contract's failure to comply with this requirement will cause the State to seek remedies under breach of contract.

18.0 PAYMENT: Payment for agreements under $500,000 for the undisputed purchase of goods or services provided to a State agency, will be made within 30 days of the receipt of a proper billing or the delivery of the goods or services to the location(s) specified in the agreement, whichever is later. A late payment is subject to 1.5% interest per month on the unpaid balance. Interest will not be paid if there is a dispute or if there is an agreement, which establishes a lower interest rate or precludes the charging of interest.

19.0 QUANTITIES: The State reserves the right to reduce or increase the quantity of items ordered under this contract.

20.0 SEVERABILITY: If any provision of this contract is declared by a court to be illegal or in conflict with any law, the validity of the remaining terms and provisions shall not be affected.

21.0 SHIPPING DAMAGE: The State will not accept or pay for damaged goods. The contractor must file all claims against the carrier(s) for damages incurred to items in transit from the point of origin to the ultimate destination. The State will provide the contractor with written notice when damaged goods are received.

22.0 STANDARD AND SPECIAL TERMS AND CONDITIONS: The terms and conditions of this section are standard to State of Alaska, Department of Transportation and Public Facilities, Statewide Equipment Fleet contracts for the purchase of goods. There may

also be other special terms and conditions in the Invitation to Bid or Request for Proposal which apply only to this contract. In the event of a conflict between the standard and special terms and conditions, the Special Terms and Conditions take precedence.

23.0 SUCCESSORS IN INTEREST: This contract shall be binding upon successors and assigns.

24.0 SUITABLE MATERIALS: All materials, supplies or equipment offered by a contractor shall be new, unused, of recent manufacture, and suitable for the manufacturer's intended purpose unless the specifications allow for used, rebuilt or remanufactured equipment.

25.0 TAXES: Prices quoted in bids must be exclusive of federal, state, and local taxes. If the contractor believes that certain taxes are payable by the State, the contractor may list such taxes separately, directly below the bid price for the affected item. The State is exempt from Federal Excise Tax because articles purchased are for the exclusive use of the State of Alaska.

26.0 USE OF BRAND OR TRADE NAMES: Brand or trade names used by the State in bid specifications are for the purpose of describing and establishing the standard of quality, performance and characteristics desired and are not a statement of preference nor are they intended to limit or restrict competition. Contractors may submit bids for substantially equivalent products to those designated unless the Invitation to Bid provides that a specific brand is necessary because of compatibility requirements. All such brand substitutions shall be subject to the State's approval.

27.0 WARRANTY: Unless otherwise stated, all equipment shall be new and current model and shall carry full factory warranties. Contractor warrants all goods delivered to be free from defects in labor, material and manufacture and to be in compliance with bid specifications. All implied or expressed warranty provisions of the Uniform Commercial Code apply. All warranties shall be for and benefit the State.

SECTION II

SPECIAL TERMS AND CONDITIONS

1.0 DELIVERY:

1.1 **Pre-delivery service:** Prior to delivery, each vehicle, piece of equipment, or attachment shall be serviced and inspected by the dealer or his agent. A certification of this inspection must include the following (as applicable to the type of equipment):

1.1.1 Dealer and vehicle identification

1.1.2 Check-off of service and inspection performed including a list of all fluids including type weight and specification that are in the equipment as delivered for all fluid compartments.

1.1.3 The vehicle's crankcase, differential and transmission, and other fluid compartments shall be filled to the manufacturer's recommended capacity.

1.1.4 Fuel tank shall be filled to at least register a minimum ¼ full on the fuel gauge, unless restricted by the commercial carrier, when the vehicle arrives at the delivery location.

1.1.5 The vehicle shall be clean and free from defects when delivered and should be ready for immediate and continued use upon delivery.

1.1.6 Units delivered in an incomplete state, or that have deficiencies per the specification, are subject to the damage charges as noted in paragraph 4.0 below."

1.2 **Delivery Receipt:**

1.2.1 A delivery receipt will be required for each unit delivered. This form will be supplied by the State Equipment Fleet prior to delivery. The receipt must be filled out by the contractor, and acknowledged by state receiving personnel by signature and date of actual receipt of equipment. One copy of this delivery receipt is to be given to the state-receiving agency. The original shall accompany the contractor's invoice to support and properly identify the vehicle delivered.

1.2.2 Contractors are cautioned and advised that such delivery forms or other receiving type documents will not in any way be construed to mean the state has formally and fully accepted unit(s) referenced thereon as complete and meeting every specification set forth. Regional Equipment Managers are to be contacted regarding delivery coordination and contacts.

1.2.3 Under no conditions will warranty documents be presented at time of delivery for signature. Only the Contracting Officer or designee may sign warranty documentation.

2.0 LINE SHEETS/BILL OF MATERIALS:

2.1 It is required within 30 days after delivery that the contractor provide a comprehensive listing of all components used to assemble the unit.

2.2 This includes any components installed by the manufacturer or any subcontractor or the contractor.

2.3 Information will include at a minimum, when available, make, model serial number on items such as engines, transmissions, axles, tires, bodies, plows, snow wings, belly blades, cranes, etc. The listings will be specific to each piece of equipment and will be provided on an individual CD for each unit delivered.

2.3.1 On after-market items that are installed, part numbers with descriptions, such as, but not limited to hydraulic fittings, are to be provided.

2.4 A minimum of four (4) CD's per unit are to be provided and marked with the make, model, and last main numbers of the units serial number or State PO number.

3.0 F.O.B. POINT:

3.1 The F.O.B. point for all items purchased under this contract is the final destination anywhere within the State of Alaska. Ownership of and title to the ordered items remains with the contractor until the items have been delivered at their final destination and are accepted by the State.

3.2 The cost of shipping and delivery for orders beyond the limits of Seattle/Tacoma dock will be handled as follows. The contractor will prepay the shipping and delivery charges to any destination named by the State in its order. The contractor will charge-back those shipping and delivery charges to the State as a separate line item on the State's invoice.

3.3 All shipping charges over $100 must be documented by a copy of the actual shipping invoice and received with the invoice charge to the State.

4.0 DAMAGES FOR LATE DELIVERY AND NON-CONFORMING GOODS:

4.1 Time is of the essence in this contract. The contractor is expected to deliver goods that conform in all material respects to the contract specifications on or before the date provided therein, as may be amended by written agreement of the parties.

4.2 In the event that the goods are delivered late or in the event that the goods do not conform in all material respects to the contract specifications, the State shall be entitled to offset against the contract price, as liquidated damages and not as a penalty, an amount equal to $<u>20.00</u> per day multiplied by the number of days elapsing between the delivery date provided in the specifications and the date that conforming goods are delivered to the State. The number of days for which liquidated damages shall apply shall include, in the case of non-conforming goods, the time reasonably necessary for the State to inspect the goods.

4.3 These liquidated damages represent a reasonable estimate of amounts necessary to compensate the State for loss of use of the goods during the period in which the goods would have been available to the State if conforming goods had been timely delivered.

5.0 WARRANTY: (Note: Language on warranty may vary from one item to another depending on the type of equipment and particular requirements of the contract.)

5.1 **Standard Warranty Package:** Unless otherwise stipulated by this contract, the contract will provide a five-year (60-month) warranty.

5.1.1 Full (100%) Parts and Labor Warranty Coverage of all components for 60 months (five-years), from the date the unit is placed in service. Warranty repairs shall take place at the vendor's authorized warranty service centers in Anchorage and/or Fairbanks. Contractors are required to have authorized warranty repair centers located in Anchorage and Fairbanks at a minimum. All travel costs for warranty performed outside of these areas will be billed as follows:

5.1.1.1 Travel Labor Charge: Travel labor will only be reimbursed for the time the employee is traveling from a warranty service center to the in-service location and return.

5.1.1.2 Mileage Charge, from the warranty service center to the in-service location.

5.1.1.3 Meals are paid at actual and charges must be accompanied by receipts and are not to exceed the State authorized $42.00 per day.

5.1.1.4 Transportation, such as airfare, shall be reimbursed at actual and all charges are to be accompanied by a receipt/copy of the ticket.

5.1.1.5 Lodging shall be reimbursed at actual and shall not exceed $100.00 per night unless no other lodging is available. Requests for reimbursement must be accompanied by a receipt.

5.1.1.6 Travel must be charged from the closest warranty service center to the in-service location unless otherwise approved by the Contract Administrator.

5.1.2 Full (100%) Warranty Coverage includes all cost of labor, parts, freight of parts or associated tools, transportation and travel in the Anchorage or Fairbanks areas (within a 10-mile radius), lubricants, miscellaneous cost, etc., to place the unit in like-new condition.

5.1.3 Should the manufacturer's standard warranty exceed the minimum State warranty requirements, the manufacturer's warranty will run in conjunction with and enhance the State's warranty, then continue for the remainder of its term.

5.2 **General Warranty Requirements for all Equipment:**

5.2.1 **Warranty Exceptions:**

5.2.1.1 For clarification, warranty does not apply to normal wear and tear or maintenance items, accident damages, misuse of equipment or failure to operate or maintain equipment as prescribed by vendor/manufacturer.

5.2.2 **Warranty on Attachments:**

5.2.2.1 Attachments and accessories are to have the same warranty coverage as the host with the exception of the VHF radio, which will be manufacturer's warranty.

5.2.3 **In-Service Date:**

5.2.3.1 Warranty on vehicles not placed in service immediately upon receipt because of time lag to construct body components and/or installation of special equipment, or due to seasonal usage or other delay, shall be warranted from the date the vehicle is placed in service. The receiving agency shall notify the vendor/manufacturer in writing of the actual "in service" date. Notification of the requirement for delayed warranty will be provided on delivery orders whenever possible.

5.2.4 **Authorized Warranty Dealer (Contractor) and Subcontractor:** For the purpose of this contract, the contractor must meet the following applicable requirements:

5.2.4.1 Contractor must:

5.2.4.1.1 possess a current Alaska Motor Vehicle Dealer License pursuant to AS 08.66.010 through AS 08.66.090, when offering motor vehicles, trailers or semi-trailers, and;

5.2.4.1.2 be a manufacturer(s) authorized warranty service dealer for each unit, and;

5.2.4.1.3 have the capability to providing warranty servicing and repair work within the State of Alaska, with authorized warranty repair facilities in Anchorage and Fairbanks at a minimum.

5.2.4.2 Contractor, if appropriate, shall submit the name, address, Alaska business license of any subcontractor who will provide the warranty servicing and repair work referenced in paragraph 5.1 above. The Contractor must also provide contractual documentation or agreements with the subcontractor insuring the state that the subcontractor will provide complete contract performance on behalf of the contractor as set forth in this ITB and verification that the work provided will maintain manufacturer's warranty requirements.

5.2.4.3 Approval of all subcontractors must take place prior to bid opening date.

5.2.4.4 The use of a subcontractor does not exclude the provisions as noted in paragraphs 5.2.4.1, and subsequent paragraphs, as requirements to the contractor.

5.2.5 **Warranty Claims:**

5.2.5.1 Warranty will be provided at the unit's assigned (in-service) location as shown in this contract, Section III - Price Schedule. Because of the remote location of some equipment it is not always practical to deliver equipment to authorized warranty repair facilities. In these cases, the vendor may perform warranty work at the state's location or, the State of Alaska, at its discretion, reserves the right to perform the warranty work and be reimbursed by the vendor.

5.2.5.2 The State of Alaska has established a warranty procedure whereby the vendor is to be notified via letter, telex, fax, telegram, etc. that warranty work needs to be performed. If time is of the essence, a telephone call confirmed by one of the above written procedures may be utilized. The vendor must notify the state <u>immediately</u> that it will <u>begin to perform</u> the warranty work at the equipment location within 48 hours from receipt of written notification. The State may, at its discretion, proceed to make warranty repairs with its own work force in the case of emergency situation or to preclude excessive downtime (greater than 48 hours).

5.2.5.3 Failure to notify the State, that the vendor intends to begin to perform warranty work promptly under this paragraph, by the end of the business day following the states notification that work is required to be performed, is considered a contractual breach.

5.2.6 The vendor will be invoiced for required warranty work performed by the state. The shop rate to be charged for warranty work performed by the state will be **$81.00** per hour. Labor hours to be charged will be in accordance with appropriate flat rate manuals. If flat rate manuals do not cover the labor operation, actual repair time will be used. Warranty work performed by state shop personnel at locations where no shop personnel are permanently stationed may be subject to travel expenses incurred involving those warranty repairs.

5.2.7 Factory Recall:

5.2.7.1 Nationwide factory recall or product update programs are the responsibility of the vendor and/or manufacturer. The State will attempt to bring affected equipment to an authorized repair facility. However, because of the remoteness of some equipment this is not always practicable or economical. In such cases, factory recall and modification work will be handled the same as warranty work. Factory recall notices sent to the state should, in addition to serial number, <u>include model, year, and dealer from whom purchased.</u>

5.2.8 **Hazardous Material:**

5.2.8.1 Due to concerns about liability resulting from hazardous materials being left at the work site on State of Alaska property, effective immediately no vendors will be allowed to use the State of Alaska rural airport facilities to perform warranty work unless they agree and sign a letter of intent stating that all waste products including oils, coolant and garbage will be removed from the work site. Vendors should note that in some village locations other suitable facilities might be available for rent from local residents or village authority.

6.0 REPAIR ORDERS AND DOCUMENTATION:

6.1 Any work performed by the contractor or approved subcontractor, whether warranty or any other work on a piece of equipment purchased under this contract, will require a copy of the repair order, any invoices showing parts and commodities including oils and types used.

7.0 PUBLICATIONS:

7.1 Publications, when ordered, for each unit ordered are to be received by the State of Alaska no later than 10 days after receipt of the unit. Custom manuals may be delivered no later than 90 days after receipt of the unit. Delivery will not be considered complete until the publications for each unit have been received by the State of Alaska. Note: Publications, when required, will be ordered on the same Purchase Order as the unit itself.

7.1.1 All manuals are to be pre-assembled in factory binders prior to delivery.

7.1.2 Separate pricing for a complete set of paper manuals as well as a CD version.

7.1.3 Refer to Section III – Price Schedule for required OPTIONAL pricing and to the individual specification.

7.2 **Service Manuals:**

7.2.1 Complete set(s) (compact disc or books) to include applicable information covering prime unit and attachments:

7.2.2 Body, chassis, and electrical

7.2.3 Engine, transmission, and differential(s) (service and rebuild)

7.2.4 Electrical and Vacuum troubleshooting

7.2.5 Wiring diagrams

7.2.6 Service specifications

7.2.7 Engine/emission diagnosis

7.3 **Parts Manuals:**

7.3.1 Complete set(s) (compact disc or paper books) to include prime unit and attachments, including updates. If updates are not provided during the

five-year warranty period, the State will order them from the manufacturer and bill the contractor for the full cost, including shipping.

7.3.2 Parts manuals are to be customized by serial number.

7.4 **Operator's Manuals:** Complete set(s) to include prime unit and attachments.

7.5 **Quantities:** As noted on Purchase Order.

7.6 **Manuals:** To be delivered to, and receipt signed by person(s) as noted on the Purchase Order.

7.7 **Service Bulletins, Etc.:** The contractor must provide appropriate service bulletins, technical support bulletins, service letters, product support bulletins, and/or any other information type notifications that are sent out to the vendor or used by the manufacturer in the maintenance and report of the vehicle, equipment or attachments being provided. The intent of this clause is that the State of Alaska be provided notification of any and all changes or improvements that may affect the maintenance, reliability, longevity, and safety of our equipment. This information will be provided as soon as possible to person(s) as noted on the Purchase Order.

8.0 STATEMENT OF ORIGIN: The contractor will furnish a Manufacturer's Statement of Origin for Automotive or Non-Automotive rolling stock for each unit. All such documents shall be forwarded to:

DOT&PF, HQ State Equipment Fleet
2200 E. 42nd Avenue Room #317
Anchorage, Alaska 99508

9.0 WEIGHT VERIFICATION SLIPS: If required in the Price Schedule, a weight scale ticket(s) of the completed unit(s) will be included with the Statement of Origin.

10.0 INSPECTIONS:

10.1 The State's inspection of all materials and equipment upon delivery is for the sole purpose of identification. Such inspection shall not be construed as final or as acceptance of the materials or equipment if materials or equipment do not conform to contract requirements. If there are any apparent defects in the materials or equipment at the time of delivery, the State will promptly notify the contractor thereof. Without limiting any other rights of the State, The State at its option, may require the contractor to:

10.1.1 Repair or replace at contractor's expense, any or all of the damaged goods,

10.1.2 refund the price of any or all of the damaged goods, or

10.1.3 accept the return of any or all of the damaged goods.

10.2 Costs of remedying all defects, indirect and consequential costs of correcting same, and/or removing or replacing any or all of the defective materials or equipment will be charged against the contractor.

11.0 PRICE:

11.1 **Price Guarantee:** The contractor is responsible to maintain prices under the contract firm for 180 days after bid opening. All price increases or decreases must remain firm for the following 180 days.

11.2 **NO RETROACTIVE PRICE INCREASES WILL BE ACCEPTED**.

11.3 Price adjustments, increases or decreases, for subsequent orders, may be made by providing the Contracting Officer satisfactory evidence that all of the following conditions exist:

11.3.1 The increase is a result of the increased cost at the manufacturer's level and not costs under the contractor's control, and that;

11.3.1.1 The increase will not produce a higher profit margin for the contractor than that on the original contract, and that;

11.3.1.2 The increase affects only the item(s) that are clearly identified by the contractor.

11.3.1.3 Satisfactory forms of the evidence of the above facts may include a certified invoice from the manufacturer, or an affidavit from an independent professional price-tracking firm that is recognized by the industry as reputable and knowledgeable. The contractor must be able to show the difference between the prior year's price and the current difference in the price being requested.

11.4 **Price Decreases:** During the period of the contract, the contractor must pass on to the state all price decreases, such as fleet rebates. A contractor's failure to adhere strictly and faithfully to this clause will be considered a material breach of contract. The state reserves the right to cancel the contract if the contractor fails to properly perform the duties set out herein.

12.0 COOPERATIVE PURCHASING:

12.1 All requests to cooperatively purchase, by qualified political subdivisions, from the resulting contract shall be approved by the Contracting Officer.

12.2 At no time may the contractor change the terms and conditions, alter the price to another entity, which differs from the contractual price, nor charge undisclosed administrative fees to allow cooperative purchasing.

12.3 The contractor shall charge, and subsequently reimburse to the State after receipt and payment by purchaser, a users fee of 2% or $1,000.00, whichever is less, for each unit ordered by a qualifying political subdivision. Any administrative fee resulting to the Contractor in fulfillment of this requirement must be included in the bid price of the offered unit.

13.0 MANUFACTURER'S REBATE (INCENTIVES): In any circumstance during or prior to completion of the contract, whereupon the State of Alaska becomes eligible to receive a rebate for any vehicle purchased under this contract, it shall be the CONTRACTOR'S responsibility to inform the Contracting officer in writing and to advise the procedures for obtaining such rebates.

14.0 REPLACEMENT PARTS:

14.1 The State of Alaska shall expect the dealer or manufacturer to provide replacement wear parts to the State of Alaska's Fairbanks, Anchorage, or Juneau facilities within seven (7) days of order. All other parts must be available within ten (10) working days.

14.2 Back order procedures: Back orders are acceptable; however, the ordering shop shall be apprised at time of original orders as to the expected delay in delivery.

14.3 Warranty: All products supplied by the contractor shall be warranted against defects in materials and workmanship for a minimum of 90 days, commencing at the time of installation as long as the installation is within 12 months of purchase. The cost of any defective product and the labor required to replace the defective product shall be the obligation of the contractor.

14.3.1 If the manufacturer's warranty exceeds the stated warranty then manufacturer's warranty supercedes.

14.3.2 Parts Return: Within 12 months of purchase, the State is to be allowed to return new, parts with full refund, less shipping charges.

14.3.3 Invoicing: Full description of item is required on all invoices, packing lists and billings.

15.0 BRAND NAME SPECIFICATION: For purposes of this contract, certain vehicle accessories are specifically identified by brand name and model/part number. Only the listed brand name and model/part numbers are acceptable. Substitutes shall be not allowed.

16.0 ADDITIONS OR DELETIONS: The State reserves the right to add or delete items, agencies or locations as determined to be in the best interest of the State. Added items, agencies or locations will be related to those on contract and will not represent a significant increase or decrease in size or scope of the contract. Such additions or deletions will be documented via mutual agreement, will be at prices consistent with the original bid price margins, and will be evidenced by issuance of a written contract change notice from the Contracting Officer.

17.0 CONTRACT ADMINISTRATION: The administration of this contract, including any/all changes, is the responsibility of the Contracting Officer, HQ State Equipment Fleet.

18.0 PROPRIETARY INFORMATION AND STATEMENTS OF CONFIDENTIALITY:

18.1 Except as set forth in this provision, all information in all bids will be made public under AS 36.30.530 not later than the time of issuance of a notice of intent to award.

18.2 If the offeror submits information considered by it to constitute a trade secret or proprietary data, such information may be expressly designated as such, and must be accompanied by the offeror's certification that (1) the information has consistently been maintained by its owner as a trade secret or as proprietary information, (2) the owner of the information has taken due care to protect it from release to non-privileged persons, and (3) to the best knowledge of the offeror, the information has not lost its status as trade secret or proprietary information,

whether by lack of diligent protection, release to any non-privileged person or otherwise.

18.3 **Absence of such certification, any claim of confidentiality will be ignored, and the contractor may not hold any reasonable expectation of confidentiality.**

18.4 Any information so certified will be held confidential so long as the contracting officer concurs that it constitutes a trade secret or proprietary data, and deems it not critical to determination of the price, quantity, or delivery terms bid, or the responsiveness of the bid.

18.5 By submission of a bid, the offeror consents to the contracting officer's exercise of reasonable judgment as to concurrence with any assertion of confidentiality, and waives any and all claims for release of information that the contracting officer reasonably deems not confidential notwithstanding a certified assertion of confidentiality.

18.6 A certified assertion of confidentiality in which the Contracting Officer concurs, with respect to information the Contracting Officer deems critical to determination of the price, quantity, or delivery terms bid, or the responsiveness of the bid, will cause the bid to be rejected as a non-responsive bid.

19.0 EQUIPMENT RELIABILITY:

19.1 Reliability of equipment is paramount importance to the State. It is the policy of SEF to require minimum levels of reliability from owned or leased equipment for it to be considered acceptable. Equipment offered for this bid must be capable of meeting the acceptable reliability standard stated below.

19.2 **Acceptable Reliability**: The state will monitor equipment reliability. Acceptable reliability for this contract is achieved when a machine achieves or maintains a Reliability Ratio (RR) equal to or exceeding the following:

19.2.1 .90 (90 percent) RR during any consecutive 12-months (365 days) during the warranty period.

19.2.2 .75 (75 percent) RR per operational month (recognizing operational as subject to weather and being defined by calendar days) during the consecutive 12-month period.

19.2.3 RR below the stated percentages do not meet minimum reliability requirements for state owned equipment.

19.3 **Machine Failure and Downtime**:

19.3.1 **Machine Failure** is any and all loss of capability to perform fully, as specified, which is not attributed to **Conditioned Failure**. Machine failure resulting in the unit being out of service is defined as **Downtime**.

19.3.2 **Conditioned Failure** is any machine failure attributable to accident, operator abuse or other external cause not attributable to a defect in the machine itself.

19.3.3 **Downtime** is the actual number of days or fractions of days that the equipment is in a state of Machine Failure. Downtime does not count time used for scheduled maintenance (including preventative maintenance and scheduled major overhauls), time lost for repair maintenance and scheduled major overhauls), time lost for repair of damage as a result of operator abuse or machine misapplication; or time lost as result of accident or an act of God. Downtime includes:

19.3.3.1 Actual shop hours (and/or field repair hours) required to return unit to full operational status following machine failure, including trouble-shooting, repair, necessary replacement of parts, and necessary adjustments, plus

19.3.3.2 Time lost waiting for parts and/or vendor assistance. "Waiting downtime" also applies if need for parts/assistance is discovered during routine maintenance and return to service is deemed counterproductive. In this case, "waiting time" clock begins with notice of need to vendor. Allowance may be considered in "waiting time" calculations if arrival of parts/ assistance is delayed by transportation shutdown, to include verifiable transportation scheduling difficulties such as infrequent flights as long as all reasonable alternatives have been exhausted. Parts and assistance are to be provided by the quickest means reasonably possible to avoid unnecessary delays and downtime.

19.3.4 **Out of Service Report (OSR):** Down time resulting from machine failure is the actual number of hours a machine is out of service as recorded on the OSR or in the Equipment Maintenance Management System (EMS).

19.3.5 The state will record all downtime on an OSR or EMS work order, which will be originated for each occurrence of downtime. The document will show the date and time a unit went down, the location where the machine was abased, the reason the machine is down, date and time the vendor was notified (if applicable), the date and time the machine was returned to service, and the total hours of downtime.

19.3.5.1 The Contract Manager will finalize and approve the OSR or EMS work order. Both are available for contractor review.

19.3.6 **Reporting Downtime:** The Contracting Officer will maintain documentation of all Downtime, and shall send copies of such documentation to the contractor.

19.3.7 **Calculation of Reliability Ratio (RR):** RR is the mathematical ratio of operated time (uptime) to out of service time (downtime). The RR will be calculated according to the following formula:

$$RR = \frac{\text{Days in a Month} - \text{Days Out of Service}^{1}}{\text{Days in a Month}^{2}} = \frac{DM-DO}{DM}$$

Note: [1]**Fractional Days** apply, i.e., a unit is out of service 8 hours in a 24 hour period equals 1/3 or .33% of a day.

[2] **A day** is allocated as 24 consecutive hours from 12:00 AM to 12:00 AM.
Example: 30 days DM with 2 days, 8 hours DT would result in:

$$RR = \frac{30-2.33}{30} = .92$$

19.3.8 **Unacceptable Reliability:** If an item of equipment fails to perform at an acceptable level of reliability during the warranty period, the Contracting Officer will notify the contractor and request immediate remedy. Failure to remedy the piece of equipment within 30 days for failure will result in a breach of contract and the immediate return of the equipment and reimbursement of the guaranteed value (V) of the unit as follows:

Original cost of the unit less (-) Freight = $_____(V)

(V) Less (-) the cost of operation as listed in the Equipment Rental Rate Blue Book for the 2nd quarter, 2005 or comparable equipment or the current Federal Fixed Usage Rate for the Class for the State of Alaska, (a, b, or c, per hour) X the number of hours used = _____ (DV)

a. Loader mounted snow blower = $192.00 per hour
b. All Carrier Units = $270.00 per hour
c. Broom, Tow Behind = $360.00 per hour

Example: Cost of single unit, less freight = $150,000. The hourly cost is $150.00 per hour. The unit was used 150 hours prior to failing the acceptable reliability. The contractor guaranties the unit's worth at $127,500.

19.3.9 Prior to return, the state will correct all reasonable cosmetic deficiencies (such as excessive rust) and those deficiencies that are directly related to damage due to accidents, misuse of equipment or failure to operate or maintain equipment as prescribed by vendor/manufacturer, prior to public auction.

19.3.10 The tires will be serviceable with at least 50% remaining tread.

19.3.11 Oil samples, as per manufacturer's service manual recommendations, will be taken by State of Alaska Maintenance on the engine, transmission, differentials and hydraulics.

19.3.12 In the case of dispute, at the expense of the State, a qualified agent from Northern Adjusters, Inc., or another professionally recognized appraiser, may be commissioned for an independent claim appraisal. Such appraisal shall be binding upon the State and contractor."

19.4 **BID BOND:**

19.4.1 The state will retain the bid guarantee of the contractor until the contractor has executed a contract and furnished a satisfactory performance bond. If the contractor fails to deliver the required performance bond within five working days after final award, the bid guarantee will be forfeited to the State of Alaska.

19.5 **PERFORMANCE BOND FOR WARRANTY & PERFORMANCE:**

19.5.1 The performance bond is due at the time of the first purchase order.

19.5.2 The state does not have backup equipment in many of its locations. Consequently, new-unit reliability and warranty performance is vital importance. To insure highest possible reliability and warranty service the State requires the contractor to post **performance security, in one of the forms listed below,** within 30 days of the first purchase order. The purpose of the posted performance deposit is to secure performance over the entire term of the contract. The performance security must cover any remaining warranty in the event that the contractor is unable to or otherwise fails to complete the five-year warranty period. The amount of the performance deposit will be $**50,000.00**. Release of the performance security will be contingent solely upon the acceptable completion of the terms of the original contract.

19.5.3 The Performance Deposit must be posted for a **TWO YEAR TERM, AND THEREAFTER ANOTHER TWO YEAR, THEN ONE YEAR, FINANCIAL GUARANTEE SECURITY OR SURETY BOND SECURED BY A SURETY COMPANY AGREED TO BY THE PARTIES TO THIS CONTRACT WILL BE PROVIDED WITHIN 90 DAYS OF THE EXPIRATION OF THE FIRST SECURITY. Failure to post the successive bond, OR to provide an alternate security as listed below, will be cause for breach of contract and immediate cancellation of any future orders.** The performance deposit will be valid from the date the unit is delivered is placed into service at the assigned location.

19.5.4 **Performance Bond**: A performance bond must be written in a form satisfactory to the state by a company authorized to do surety business in Alaska. The performance bond must provide that it is payable to the State of Alaska as security for the contractor's full and faithful performance of the contract.

19.5.5 **Alternate Security**: In lieu of a performance bond, a contractor may post security in the form of a certified or cashier's check, or a certificate of deposit, to be returned to the contractor provided that the contractor fully and faithfully performs the contract, including all warranty obligations.

19.5.6 **Certified or Cashier's Check**: A certified or cashier's check, made payable to the State of Alaska.

19.5.7 **Certificate of Deposit**: A Certificate of Deposit (CD) made payable to the State of Alaska. Inclusion of other verbiage on the "payee" or "pay to" line will render the security unacceptable.

20.0 TRADE RESTRICTION CLAUSE (9 CFR Part 30.13FAA Order 5100.38)

20.1 The contractor or subcontractor, by submission of an offer and/or execution of a contract, certifies that it:

20.1.1 is not owned or controlled by one or more citizens of a foreign country included in the list of countries that discriminate against U.S. firms published by the Office of the United States Trade Representative (USTR);

20.1.2 has not knowingly entered into any contract or subcontract for this project with a person that is a citizen or national of a foreign country on said list, or is owned or controlled directly or indirectly by one or more citizens or nationals of a foreign country on said list;

20.1.3 has not procured any product nor subcontracted for the supply of any product for use on the project that is produced in a foreign country on said list.

20.2 Unless the restrictions of this clause are waived by the Secretary of Transportation in accordance with 49 CFR 30.17, no contract shall be awarded to a contractor or subcontractor who is unable to certify to the above. If the contractor knowingly procures or subcontracts for the supply of any product or service of a foreign country on said list for use on the project, the Federal Aviation Administration may direct through the Sponsor cancellation of the contract at no cost to the Government.

20.3 Further, the contractor agrees that, if awarded a contract resulting from this solicitation, it will incorporate this provision for certification without modification in each contract and in all lower tier subcontracts. The contractor may rely on the certification of a prospective subcontractor unless it has knowledge that the certification is erroneous.

20.4 The contractor shall provide immediate written notice to the sponsor if the contractor learns that its certification or that of a subcontractor was erroneous when submitted or has become erroneous by reason of changed circumstances. The subcontractor agrees to provide written notice to the contractor if at any time it learns that its certification was erroneous by reason of changed circumstances.

20.5 This certification is a material representation of fact upon which reliance was placed when making the award. If it is later determined that the contractor or subcontractor knowingly rendered an erroneous certification, the Federal Aviation Administration may direct through the Sponsor cancellation of the contract or subcontract for default at no cost to the Government.

20.6 Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render, in good faith, the certification required by this provision. The knowledge and information of a contractor is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

20.7 This certification concerns a matter within the jurisdiction of an agency of the United States of America and the making of a false, fictitious, or fraudulent certification may render the maker subject to prosecution under Title 18, United States Code, Section 1001.

21.0 CIVIL RIGHTS ACT OF 1964, TITLE VI – CONTRACTOR CONTRACTUAL REQUIREMENTS (49 CFR Part 21 AC 150/5100-15)

21.1 During the performance of this contract, the contractor, for itself, its assignees and successors in interest (hereinafter referred to as the "contractor") agrees as follows:

21.1.1 **Compliance with Regulations.** The contractor shall comply with the Regulations relative to nondiscrimination in federally assisted programs of the Department of Transportation (hereinafter, "DOT") Title 49, Code of Federal Regulations, Part 21, as they may be amended from time to time (hereinafter referred to as the Regulations), which are herein incorporated by reference and made a part of this contract.

21.1.2 **Nondiscrimination.** The contractor, with regard to the work performed by it during the contract, shall not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The contractor shall not participate either directly or indirectly in the discrimination prohibited by section 21.5 of the Regulations, including employment practices when the contract covers a program set forth in Appendix B of the Regulations.

21.1.3 **Solicitations for Subcontracts, Including Procurements of Materials and Equipment.** In all solicitations either by competitive bidding or negotiation made by the contractor for work to be performed under a subcontract, including procurements of materials or leases of equipment, each potential subcontractor or supplier shall be notified by the contractor of the contractor's obligations under this contract and the Regulations relative to nondiscrimination on the grounds of race, color, or national origin.

21.1.4 **Information and Reports.** The contractor shall provide all information and reports required by the Regulations or directives issued pursuant thereto and shall permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Sponsor or the Federal Aviation Administration (FAA) to be pertinent to ascertain compliance with such Regulations, orders, and instructions. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish this information, the contractor shall so certify to the sponsor or the FAA, as appropriate, and shall set forth what efforts it has made to obtain the information.

21.1.5 **Sanctions for Noncompliance.** In the event of the contractor's noncompliance with the nondiscrimination provisions of this contract, the sponsor shall impose such contract sanctions as it or the FAA may determine to be appropriate, including, but not limited to:

21.1.5.1 Withholding of payments to the contractor under the contract until the contractor complies, and/or

21.1.5.2 Cancellation, termination, or suspension of the contract, in whole or in part.

21.1.6 **Incorporation of Provisions.** The contractor shall include the provisions of paragraphs 1 through 5 in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Regulations or directives issued pursuant thereto. The contractor shall take such action with respect to any subcontract or procurement as the sponsor or the FAA may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, however, that in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or supplier as a result of such direction, the contractor may request the Sponsor to enter into such litigation to protect the interests of the sponsor and, in addition, the contractor may request the United States to enter into such litigation to protect the interests of the United States.

22.0 AIRPORT AND AIRWAY IMPROVEMENT ACT OF 1982, SECTION 520 - GENERAL CIVIL RIGHTS PROVISIONS (Airport and Airway Improvement Act of 1982, Section 520, Title 49 47123,AC 150/5100-15, Para. 10.c)

22.1 The contractor assures that it will comply with pertinent statutes, Executive orders and such rules as are promulgated to assure that no person shall, on the grounds of race, creed, color, national origin, sex, age, or handicap be excluded from participating in any activity conducted with or benefiting from Federal assistance. This provision obligates the tenant/concessionaire/lessee or its transferee for the period during which Federal assistance is extended to the airport a program, except where Federal assistance is to provide, or is in the form of personal property or real property or interest therein or structures or improvements thereon. In these cases the provision obligates the party or any transferee for the longer of the following periods: (a) the period during which the property is used by the airport sponsor or any transferee for a purpose for which Federal assistance is extended, or for another purpose involving the provision of similar services or benefits or (b) the period during which the airport sponsor or any transferee retains ownership or possession of the property. In the case of contractors, this provision binds the contractors from the bid solicitation period through the completion of the contract. This provision is in addition to that required of Title VI of the Civil Rights Act of 1964.

23.0 DISADVANTAGED BUSINESS ENTERPRISES (49 CFR Part 26)

23.1 **Contract Assurance (§26.13)** - The contractor or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of DOT assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy, as the recipient deems appropriate.

23.2 **Prompt Payment (§26.29)** - The prime contractor agrees to pay each subcontractor under this prime contract for satisfactory performance of its contract no later than ***30*** days from the receipt of each payment the prime contractor receives from the State of Alaska**.** The prime contractor agrees further to return retainage payments to each subcontractor within [specify the same number as above] days after the subcontractor's work is satisfactorily completed. Any delay or postponement of payment from the above referenced time frame may occur only for good cause following written approval of the Contracting Officer This clause applies to both DBE and non-DBE subcontractors.

24.0 LOBBYING AND INFLUENCING FEDERAL EMPLOYEES (49 CFR Part 20, Appendix A)

24.1 No Federal appropriated funds shall be paid, by or on behalf of the contractor, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the making of any Federal grant and the amendment or modification of any Federal grant.

24.2 If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with any Federal grant, the contractor shall complete and submit Standard Form-LLL, “Disclosure of Lobby Activities,” in accordance with its instructions.

25.0 ACCESS TO RECORDS AND REPORTS (49 CFR Part 18.36(i),FAA Order 5100.38)

25.1 The contractor shall maintain an acceptable cost accounting system. The contractor agrees to provide the Sponsor, the Federal Aviation Administration and the Comptroller General of the United States or any of their duly authorized representatives access to any books, documents, papers, and records of the contractor which are directly pertinent to the specific contract for the purpose of making audit, examination, excerpts and transcriptions. The Contractor agrees to maintain all books, records and reports required under this contract for a period of not less than three years after final payment is made and all pending matters are closed.

26.0 ENERGY CONSERVATION REQUIREMENTS (49 CFR Part 18.36 & Public Law 94-163)

26.1 The contractor agrees to comply with mandatory standards and policies relating to energy efficiency that are contained in the state energy conservation plan issued in compliance with the Energy Policy and Conservation Act.

27.0 BREACH OF CONTRACT TERMS (49 CFR Part 18.36)

27.1 Any violation or breach of terms of this contract on the part of the contractor or their subcontractors may result in the suspension or termination of this contract or such other action that may be necessary to enforce the rights of the parties of this agreement. The duties and obligations imposed by the Contract Documents and the rights and remedies available thereunder shall be in addition to and not a limitation of any duties, obligations, rights and remedies otherwise imposed or available by law.

28.0 RIGHTS TO INVENTIONS (49 CFR Part 18.36(i)(8) & FAA Order 5100.38)

28.1 All rights to inventions and materials generated under this contract are subject to regulations issued by the FAA and the Sponsor of the Federal grant under which this contract is executed.

29.0 TRADE RESTRICTION CLAUSE (49 CFR Part 30.13 & FAA Order 5100.38)

29.1 The contractor or subcontractor, by submission of an offer and/or execution of a contract, certifies that it:

29.1.1 is not owned or controlled by one or more citizens of a foreign country included in the list of countries that discriminate against U.S. firms published by the Office of the United States Trade Representative (USTR);

29.1.2 has not knowingly entered into any contract or subcontract for this project with a person that is a citizen or national of a foreign country on said list, or is owned or controlled directly or indirectly by one or more citizens or nationals of a foreign country on said list;

29.1.3 has not procured any product nor subcontracted for the supply of any product for use on the project that is produced in a foreign country on said list.

29.2 Unless the restrictions of this clause are waived by the Secretary of Transportation in accordance with 49 CFR 30.17, no contract shall be awarded to a contractor or subcontractor who is unable to certify to the above. If the contractor knowingly procures or subcontracts for the supply of any product or service of a foreign country on said list for use on the project, the Federal Aviation Administration may direct through the Sponsor cancellation of the contract at no cost to the Government.

29.3 Further, the contractor agrees that, if awarded a contract resulting from this solicitation, it will incorporate this provision for certification without modification in each contract and in all lower tier subcontracts. The contractor may rely on the certification of a prospective subcontractor unless it has knowledge that the certification is erroneous.

29.4 The contractor shall provide immediate written notice to the sponsor if the contractor learns that its certification or that of a subcontractor was erroneous when submitted or has become erroneous by reason of changed circumstances. The subcontractor agrees to provide written notice to the contractor if at any time it learns that its certification was erroneous by reason of changed circumstances.

29.5 This certification is a material representation of fact upon which reliance was placed when making the award. If it is later determined that the contractor or subcontractor knowingly rendered an erroneous certification, the Federal Aviation Administration may direct through the Sponsor cancellation of the contract or subcontract for default at no cost to the Government.

29.6 Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render, in good faith, the certification required by this provision. The knowledge and information of a contractor is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

29.7 This certification concerns a matter within the jurisdiction of an agency of the United States of America and the making of a false, fictitious, or fraudulent certification may render the maker subject to prosecution under Title 18, United States Code, Section 1001.

30.0 TERMINATION OF CONTRACT (49 CFR Part 18.36(i)(2) & FAA Order 5100.38)

30.1 The Sponsor may, by written notice, terminate this contract in whole or in part at any time, either for the Sponsor's convenience or because of failure to fulfill the contract obligations. Upon receipt of such notice services shall be immediately discontinued (unless the notice directs otherwise) and all materials as may have been accumulated in performing this contract, whether completed or in progress, delivered to the Sponsor.

30.2 If the termination is for the convenience of the Sponsor, an equitable adjustment in the contract price shall be made, but no amount shall be allowed for anticipated profit on unperformed services.

30.3 If the termination is due to failure to fulfill the contractor's obligations, the Sponsor may take over the work and prosecute the same to completion by contract or otherwise. In such case, the contractor shall be liable to the Sponsor for any additional cost occasioned to the Sponsor thereby.

30.4 If, after notice of termination for failure to fulfill contract obligations, it is determined that the contractor had not so failed, the termination shall be deemed to have been effected for the convenience of the Sponsor. In such event, adjustment in the contract price shall be made as provided in paragraph 2 of this clause.

30.5 The rights and remedies of the sponsor provided in this clause are in addition to any other rights and remedies provided by law or under this contract.

31.0 CERTIFICATION REGARDING DEBAREMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION (49 CFR Part 29 & FAA Order 5100.38)

31.1 The contractor certifies, by acceptance of this contract, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency. It further agrees by submitting this proposal that it will include this clause without modification in all lower tier transactions, solicitations, proposals, contracts, and subcontracts. Where the contractor or any lower tier participant is unable to certify to this statement, it shall attach an explanation to the solicitation/proposal.

32.0 CLEAN AIR AND WATER POLLUTION CONTROL (49 CFR Part 18.36(i)(12) & Section 306 of the Clean Air Act & Section 508 of the Clean Water Act)

32.1 Contractors and subcontractors agree:

32.1.1 That any facility to be used in the performance of the contract or subcontract or to benefit from the contract is not listed on the Environmental Protection Agency (EPA) List of Violating Facilities;

32.1.2 To comply with all the requirements of Section 114 of the Clean Air Act, as amended, 42 U.S.C. 1857 et seq. and Section 308 of the Federal Water Pollution Control Act, as amended, 33 U.S.C. 1251 et seq. relating to inspection, monitoring, entry, reports, and information, as well as all other requirements specified in Section 114 and Section 308 of the Acts, respectively, and all other regulations and guidelines issued there under;

32.1.3 That, as a condition for the award of this contract, the contractor or subcontractor will notify the awarding official of the receipt of any communication from the EPA indicating that a facility to be used for the performance of or benefit from the contract is under consideration to be listed on the EPA List of Violating Facilities;

32.1.4 To include or cause to be included in any construction contract or subcontract which exceeds $ 100,000 the aforementioned criteria and requirements.

33.0 BUY AMERICAN CERTIFICATE:

33.1 By submitting a bid/proposal, except for those items listed by the offeror below or on a separate and clearly identified attachment to this bid/proposal, the contractor certifies that steel and each manufactured product, are produced in the United States, as defined in the clause Buy American - Steel and Manufactured Products for Construction Contracts) and that components of unknown origin are considered to have been produced or manufactured outside the United States.

33.2 Offerors may obtain from the owner a listing of articles, materials and supplies excepted from this provision.

Product	*Country of Origin*

34.0 BUY AMERICAN PREFERENCES (Section 9129 of the Aviation Safety and Capacity Expansion Act of 1990 & Title 49 U.S.C. Chapter 501)

34.1 The Aviation Safety and Capacity Expansion Act of 1990 provides that preference be given to steel and manufactured products produced in the United States when funds are expended pursuant to a grant issued under the Airport Improvement Program. The following terms apply:

34.1.1 Steel and manufactured products. As used in this clause, steel and manufactured products include (1) steel produced in the United States or (2) a manufactured product produced in the United States, if the cost of its components mined, produced or manufactured in the United States exceeds 60 percent of the cost of all its components and final assembly has taken place in the United States. Components of foreign origin of the same class or kind as the products referred to in subparagraphs b. (1) or (2) shall be treated as domestic.

34.1.2 Components. As used in this clause, components means those articles, materials, and supplies incorporated directly into steel and manufactured products.

34.1.3 Cost of Components. This means the costs for production of the components, exclusive of final assembly labor costs.

34.2 The contractor is required to assure that only domestic steel and manufactured products will be used by the contractor, subcontractors, materialmen and suppliers in the performance of this contract, except those:

34.2.1 that the US Department of Transportation has determined, under the Aviation Safety and Capacity Expansion Act of 1990, are not produced in

the United States in sufficient and reasonably available quantities and of a satisfactory quality;

34.2.2 that the US Department of Transportation has determined, under the Aviation Safety and Capacity Expansion Act of 1990, that domestic preference would be inconsistent with the public interest; or

34.2.3 that inclusion of domestic material will increase the cost of the overall project contract by more than 25 percent.

34.3 **For compliance with the above, the contractor provided the following information with their bid:**

34.3.1 Location and statement of final assembly:

34.3.1.1 Company Name: Monroe Truck Equipment

Physical Address: 1051 W. 7th Street

City, State & Zip Code: Monroe, WI 53566

Final assembly of Monroe plows includes gathering of parts; the modification or assembly and/or; installation of OEM components; and the manufacture and installation of specialty parts, prep and paint of assembled unit; and final test and shipment to dealer or user.

34.3.1.2 Company Name: Oshkosh Truck Company

Physical Address: 2307 Oregon Street

City, State & Zip Code: Oshkosh, WI 54903

Final assembly of Oshkosh Snow blower includes: gathering all parts required in a timely fashion based on assigned line drop date: sub-assembling all components and systems into assemblies at remote areas of the plant: base unit starting from the frame rails traveling through 50 stations on a moving assembly line; on line wheel alignment for all axles; on line chassis dynamometer testing; prep and paint of the assembled vehicle; final test of unit, including road test; and shipment to dealer, customer, or other manufacturer for further processing as required by the particular order.

34.3.1.3 Company Name: M-B Companies

Physical Address: 1200 Park Street

City, State & Zip Code: Chilton, WI 53014

Final assembly for the M-B Companies broom attachment consists of: gathering parts, the modification or assembly and/or; installation of OEM components and the; manufacture and installation of specialty parts, prep and paint of assembled unit; and final test and shipment to dealer or user.

34.4 **Percentage of U.S. Components: 60% or more**

Contractor's Affirmation of U.S. componentry:

U.S. manufactured Component:

Chassis, frame, drive train, cab, electrical, hydraulic components, controls, snow blower, broom, plow, etc.

SECTION III

PRICE SCHEDULE

LOT #2

Item #	Unit	Description	Total $ Amount
2a	ea.	**Dedicated 4x4 carrier mounted snow blower** with**:** quick attach, minimum 4,000 ton per hour capacity, minimum 380 HP carrier engine, minimum 525 hp snow blower engine, minimum 27,000 pound front axle, and minimum 23,000 pound rear axle. Per Specification #743-Multi-Purpose-AIP, contained herein. (Below optional items not included in above pricing)	**$516,600.00**
		State Class #757	
		Carrier - Year, Make and Model Offered: **2006 OSHKOSH H2723B**	
		Blower - Year, Make and Model Offered: **2006 OSHKOSH BLOWER HEAD**	
		OPTIONAL ITEMS:	
2b	ea.	Optional (for 2a) – 650 HP Blower Engine: Providing minimum 5000 TPH Blower Capacity. (As per Spec Item 7.2)	**$14,600.00**
2c	ea.	Optional (for 2a) – Loading Chute: This would also required a minimum 29,000 pound front axle. (As per Spec Item 11.4)	**$25,700.00**
2d	ea.	Optional (for 2a) - Training in Anchorage: (As per Spec Item 22.0)	**$ 2,890.00**
2e	ea.	Optional (for 2a) - Training in Fairbanks: (As per Spec Item 22.0)	**$ 3,350.00**
2f	ea.	Optional (for 2a) - Training in Juneau: (As per Spec Item 22.0)	**$ 3,860.00**
2g	ea.	Optional (for 2a) – Publication, per set: (As per Spec Item 23.6)	**$ 2,650.00**
2h	ea.	Optional (for 2a) – Publications (CD), per set: (As per Spec Item 23.6)	**$ 1,280.00**

2i	ea.	**Dedicated 4x4 carrier mounted runway broom** with**:** quick attach, 18 foot wide broom width, air Blower System. minimum 470 HP carrier engine, minimum 380 hp broom engine, minimum 27,000 pound front axle and minimum 23,000 pound rear axle. Per Specification #743-Multi-Purpose-AIP, contained herein. (Below optional items not included in above pricing.)	**$449,000.00**
		State Class #549	
		Carrier - Year, Make and Model Offered:	**2006 OSHKOSH HB2723**
		Broom - Year, Make and Model Offered:	**2006 M-B 4618DP**
		OPTIONAL ITEMS:	
2j	ea.	Optional (for 2i) Air Conditioning: (As per Spec Item 5.5)	**$7,530.00**
2k	ea.	Optional (for 2i) - Training in Anchorage: (As per Spec Item 22.0)	**$3,993.00**
2l	ea.	Optional (for 2i) - Training in Fairbanks: (As per Spec Item 22.0)	**$4,345.00**
2m	ea.	Optional (for 2i) - Training in Juneau: (As per Spec Item 22.0)	**$4,345.00**
2n	ea.	Optional (for 2i) – Publications, per set: (As per Spec Item 23.6)	**$2,500.00**
2o	ea.	Optional (for 2i) – Publications (CD), per set (As per Spec Item 23.6)	**$ 902.00**

2p	ea.	**High-Performance Dedicated, 4x4, carrier** with: mounted 18 foot runway broom, air blower system, minimum 470 HP carrier engine, minimum 650 HP auxiliary engine, minimum 27,000 pound front axle and minimum 23,000 pound rear axle. Per Specification #743-Multi-Purpose-AIP, contained herein. (Below optional items not included in above pricing)	**$463,400.00**

State Class #549

Carrier - Year, Make and Model Offered: **2006 OSHKOSH HB2723**

Broom - Year, Make and Model Offered: **2006 M-B 4618-DP-HP3**

OPTIONAL ITEMS

2q	ea.	Optional (for 2p) - Air Conditioning: (As per Spec Item 5.5)	**$7,530.00**
2r	ea.	Optional (for 2p) - Training in Anchorage: (As per Spec Item 22.0)	**$3,993.00**
2s	ea.	Optional (for 2p) - Training in Fairbanks: (As per Spec Item 22.0)	**$4,345.00**
2t	ea.	Optional (for 2p) - Training in Juneau: (As per Spec Item 22.0)	**$4,345.00**
2u	ea.	Optional (for 2p) – Publications (Paper) per set: (As per Spec Item 23.6)	**$2,500.00**
2v	ea.	Optional (for 2p) – Publications (CD), per set: (As per Spec Item 23.6)	**$ 902.00**

2x	ea.	**Multi-Purpose, 4x4, Carrier**, with: minimum 5,000 TPH snow blower head, 18 foot wide runway broom, and air blower system. minimum 470 HP carrier engine, minimum 650 HP auxiliary engine, minimum 27,000 pound front axle and minimum 23,000 pound rear axle. Per Specification #743-Multi-Purpose-AIP, contained herein. (Below optional items not included in above pricing)	**$635,475.00**

State Class #743

Carrier - Year, Make and Model Offered: **2006 OSHKOSH H2723B**

Broom - Year, Make and Model Offered: **2006 M-B 4618-MP**

Blower - Year, Make and Model Offered: **2006 OSHKOSH BLOWER HEAD**

OPTIONAL ITEMS:

2y	ea.	Optional (for 2x) Air - Conditioning per: (As per Spec Item 5.5)	**$ 7,530.00**
2z	ea.	Optional (for 2x) - Snow Blower Loading Chute: This would also required a minimum 29,000 pound front axle. (As per Spec Item 11.4)	**$26,275.00**
2za	ea.	Optional (for 2x) - Training in Anchorage: (As per Spec Item 22.0)	**$ 3,933.00**
2zb	ea.	Optional (for 2x) - Training in Fairbanks: (As per Spec Item 22.0)	**$4,345.00**
2zc	ea.	Optional (for 2x - Training in Juneau: (As per Spec Item 22.0)	**$2,767.00**
2zd	ea.	Optional (for 2x) – Publications: (As per Spec Item 23.6)	**$1,312.00**

2ze	ea.	**4x4 Carrier Plow Truck,** with: 24 foot folding moldboard airport runway snow plow attachment, 18 foot airport ramp snow plow attachment, ballast blocks, quick attach system. minimum 470 HP carrier engine, minimum 29,000 pound front axle and minimum 23,000 pound rear axle. Per Specification #743-Multi-Purpose-AIP, contained herein. (Below optional items not included in above pricing)	**$397,213.00**

State Class #286

Carrier - Year, Make and Model Offered: **2006 OSHKOSH HB2723**

24-Foot Plow - Year, Make and Model Offered: **2006 OSHKOSH 5024-F-F**

18-Foot Plow - Year, Make and Model Offered: **2006 MONROE SB18**

OPTIONAL ITEMS

2zb	ea.	Optional (for 2za) - Air Conditioning: As per Spec Item 5.5)	**$7,370.00**
2zc	ea.	Optional (for 2za) - Training in Anchorage: (As per Spec Item 22.0)	**$2,894.00**
2zd	ea.	Optional (for 2za) - Training in Fairbanks: (As per Spec Item 22.0)	**$3,354.00**
2ze	ea.	Optional (for 2za) - Training in Juneau: (As per Spec Item 22.0)	**$3,862.00**
2zf	ea.	Optional (for 2za) – Publications, (Paper), per set: (As per Spec Item 23.6)	**$2,162.00**
2zg	ea.	Optional (for 2za) – Publications (CD), per set: (As per Spec Item 23.6)	**$ 865.00**

Required Delivery: **Not later than 270 days ARO** to dockside Seattle/Tacoma area.

Offered Delivered Time: **210** Days ARO.

NOTE: Final shipment to in-service locations as annotated on the Purchase or Delivery Orders will be arranged and pre-paid by the contractor. The actual cost will be invoiced as a separate line item on the invoice for full reimbursement by the State. Shipping arrangements will always be in the best interest of the State and any extraordinary costs or circumstances pre-approved by the Contracting Officer prior to shipment. Refer to Section II – Standard Terms and Conditions, paragraph 3.0.

Weight Scale tickets, as per Spec Item 16.13 are to be provided.

TRAVEL COSTS (For warranty performed outside the Anchorage, Fairbanks, or Juneau area):
These costs will not be used for bid evaluation purposes.

Per Mile	**$ 2.50**
Per Hour (travel labor)	**$80.00**

SECTION VI

SPECIFICATIONS

SPECIFICATION #743-Multi-Purpose-AIP
Multi-Purpose 4x4 Carrier
With a selection of different attachments including:
4,000 TPH Snow Blower Head Attachment,
5,000 TPH Snow Blower Head Attachment,
18-Foot Airport Runway Broom Attachment,
Airport Air Blower System,
24-Foot Runway Snow Plow
18-Foot Ramp Snow Plow
October 19, 2005

GENERAL SPECIFICATION:

It is the purpose of this specification to describe a new, and of the manufacturer's latest current year production model and design, multi-purpose 4x4 carrier for both highway and airport use. Carrier is to include it's own power drive system. An additional engine will be used to power optional attachments including; 1) high-speed air blower; 2) minimum 5,000 ton-per-hour (TPH) two-stage rotary snow blower; or 3) 18 foot runway broom.

As per Section III – Price Schedule, this unit may be configured in several different ways:

(1) As a dedicated snow blower as a minimum 4,000 TPH.

(2) As a dedicated snow blower as a minimum 5,000 TPH.

(3) As a dedicated runway broom.

(4) As a multi-purpose unit that could be equipped with a snow blower head and a runway broom, by utilizing a quick attach system.

(5) As a dedicated plow truck that would be capable of utilizing a 24-foot folding wing snow plow and an 18-foot ramp snow plow utilizing a quick attach system.

The broom is to be capable of completely removing up to 2½ (2.5) inches light snow (8 to 15 pounds per cubic foot) at speeds of 10 to 30 MPH with a 3-inch strike pattern. The unit is to be capable of sweeping slush (density of 40 pounds per cubic foot) at speeds of 10 to 30 MPH. The unit shall also be capable of sweeping thin deposits of dry sand, dust, water, or other light debris.

When a quick attach system is required, it is to allow changing attachments with only minimal time involved.

The carrier's cab shall be positioned behind the blower chute. Cab over design is not acceptable.

Unit is to include all factory standard equipment, unless specified otherwise.

Unit is to comply with requirements of FAA Advisory Circular #150/5220-20 including any and all changes. This specification will supersede the circular.

APPLICATION:

This equipment will be utilized for winter snow removal operations at Alaska rural airports throughout Alaska on runways, ramps, and taxiways, at speeds up to 45 MPH.

Unit will be subject to varying terrain and weather conditions to minus 40 degrees Fahrenheit.

DOCUMENTATION REQUIRED:

A basic manufacturer's product brochure(s) describing the unit(s) was provided.

In addition, specifications marked with an asterisk (*) require supporting documentation, which indicates specifically what the contractor intends to supply in regard to said items and/or how specifications will be met. **In order to help prevent technical errors, following each asterisked is space that may be used to address all of the asterisked items. It is required that a letter of clarification or the space behind the asterisked items be used to supply the required information. The area behind the asterisked item refers to a product brochure, manufacturer's technical data sheet, or letter of clarification, which indicates specifically what the contractor intends to supply in regard to said items and/or how specifications are met.**

1.0 POWER TRAIN – CARRIER:

1.1 Engine – Carrier:

1.1.1 ***If used as a dedicated snow blower*:**

1.1.1.1 (*) Diesel, water-cooled, four (4) cycle, 12.5 liter (763 cubic inch) minimum displacement, electronically controlled, 380 SAE gross horsepower minimum, 1500 pound foot. Torque minimum. Not to exceed 2,100 rpm.

Cat C-13 ACERT in-line 6, four cycle, 12.5 liter, 380 hp @2,100 rpm, 1,450 lb ft @ 1,200 rpm.

1.1.2 ***If used as a dedicated broom with air blower system or if equipped with a runway or ramp snow plow*:**

1.1.2.1 (*) Diesel, water-cooled, four (4) cycle, 12.5 liter (763 cubic inch) minimum displacement, electronically controlled, 470 SAE gross horsepower minimum, 1550 pound foot torque minimum. Not to exceed 2,100 rpm.

Cat C-13 ACERT, in-line 6, four cycle, 12.5 liter, 470 hp @2,100 rpm, 1,550 lb ft @ 1,200 rpm.

1.2 Engine, General:

1.2.1 (*) Engine to be mounted to rear of chassis for unit balance and to allow for minimum noise injection into cab.

Engine mounted to rear of chassis for unit balance and minimum noise injection into cab.

1.2.2 Governor will be of the correct type to control and limit engine speeds as recommended by the engine, driveline, and power train component manufacturers, for its intended use in this vehicle.

1.2.3 To be equipped with electronic high idle circuit, to maintain approximately 1200 RPM (for warm-up purposes). Cable control is not acceptable.

1.2.4 Engine shall meet current EPA off-highway emission requirements at time of delivery.

1.3 Engine Cooling System:

1.3.1 Permanent type antifreeze to minus 60 degrees Fahrenheit.

1.3.2 Radiator:

1.3.2.1 The radiator shall include a steel tank with the core being constructed of copper and brass (plastic or aluminum radiator is not acceptable.

1.3.2.2 The radiator shall be capable of maintaining the correct operating temperature under all conditions encountered without dependence on other systems to provide cooling. If cooling system incorporates the use of shutters or other method of diverting air to either the radiator or engine air intake, these systems shall operate consistent with the engine manufacturer's recommendations.

1.3.2.3 To be mounted securely on vibration dampening mounts.

1.3.3 A coolant circulation bypass will be provided to allow coolant to circulate within the engine block while thermostat is closed.

1.3.4 Drain cocks will be provided at the low point of radiator and engine block.

1.3.5 Safe and easy access to radiator fill shall be provided (hand rails with built-on ladder if necessary).

1.3.6 Engine coolant level sight gauge, easily seen by maintenance personnel when checking engine oil, etc.

1.3.7 Hoses: *GATES* Bluestrip, or GATES Greenstripe, or silicone to be provided on all radiator and heater hoses.

1.3.8 Hose Clamps: Utilized on engine coolant lines one (1) inch inside diameter or larger are to be *CONSTANT-TORQUE* or equivalent, stainless steel.

1.3.9 Airflow through engine compartment will be such that compartment maintains a positive pressure to prevent compartment from becoming filled with dry snow or other contaminants.

1.3.10 To include engine manufacturer's certification that the engine will maintain, but not exceed, a continuous operating temperature, as an operational unit, with a wide range of ambient temperatures to as low as minus 40 degrees Fahrenheit. *Certification to be provided not later than pilot inspection*.

1.4 Engine Air Intake System:

1.4.1 Must have two (2) stage (dual element) air cleaner.

1.4.2 Air filter restriction indicator, dash-mounted with audible alarm.

1.4.3 (*) Air intake may include a dual inside or outside system that will allow inside air intake when outside ambient temperature is 40 degrees Fahrenheit or below, or outside air intake when outside ambient temperature is above 40 degrees Fahrenheit. The process of changing from inside to outside or vice versa shall not require any tools other than a standard Crescent type wrench. Time involved should not take more than five (5) minutes, even in the most extreme weather conditions.

Includes inside and outside air intake for above-40 degree and below 40 degrees ambient air temperature operation, Can change from one to the other in less than 5 minutes with a crescent wrench in all weather conditions

1.4.3.1 If outside air, even with the *DONALDSON* system, the unit must include a *SURECO* Turbo II or *SURECO* Power Ram or *ENGINAIR* system.

1.5 Engine Exhaust System:

1.5.1 Exhaust system to be designed to prevent rain, snow, or slush from entering exhaust system.

1.5.2 Exhaust piping to be located away from cab providing maximum visibility and be heat shielded if vulnerable to maintenance personnel.

1.5.3 Horizontal exhaust piping shall be shielded to prevent spilled flammable fluids from contacting surface, where applicable.

1.5.4 Mufflers and tailpipe will be designed to minimize noise without causing excessive backpressure.

1.6 Engine Fuel System:

1.6.1 (*) Capacity: Sufficient to supply fuel to the engine(s) when the engine(s) is/are operating at rated intermittent HP at governed speed for ten (10) hours minimum shall be provided. Letter of clarification in bid file.

1.6.2 When more than one (1) tank is furnished, means shall be provided to assure equalized fuel level in all tanks. A line, if used, shall be one (1) inch diameter, minimum.

1.6.3 Filters:

1.6.3.1 To be spin-on type.

1.6.3.2 To include ¼ turn valve(s), if required, to prevent excessive leakage when changing fuel filter(s)

1.6.3.3 Fuel filter(s) to be located in engine compartment with braided fuel lines to pump. (Steel lines are acceptable if both filter and pump is engine attached).

1.6.4 Fuel system to include heated fuel and water separator.

1.6.5 Fuel tank(s) to be mounted so as not to affect the balance of the unit (full or empty).

1.6.6 Fuel fill, minimum four (4) inch diameter with chained cap, shall permit easy fill operation, including access room, by all ground personnel (short or tall in height). Tight caps may require "Wings" to permit easy removal/installation.

1.7 Engine Oil Filtration: Oil filters to be spin-on type.

1.8 Engine oil drain to be equipped with a ¼ (one-quarter) turn ball shut-off valve (easily accessed). An extension hose, or piping, may be required to allow draining of oil into a bucket or pan that would be positioned at ground level. The ball valve, end of the hose, or piping would require a threaded cap or plug.

1.9 Engine Cold Starting Aids:

1.9.1 Automatic electronic ether injection system, *KBI* Dieselmatic, *TURNER* Quick Start, or equivalent.

1.9.1.1 To be wired through starter button.

1.9.1.2 To include an engine sensor switch.

1.9.1.3 System to be installed in engine compartment and to have maximum protection from the elements.

1.9.2 Engine Block Heater: Immersion type, highest wattage available, 110 volt AC (OEM if available).

1.9.3 Engine oil pan heater, one (1) each, 300 watt, 110 volt AC, silicone pad heater bonded to oil pan, *BESCO*, *KAT'S, WATLO,* or equivalent.

2.0 DRIVE TRAIN - CARRIER:

2.1 Design: To be two (2) axle, single tire, 4x4.

2.2 Transport Speed: With snow blower head in transport position, shall be capable of maintaining a continuous forward speed of not less than 45 MPH on dry level pavement.

2.3 Carrier Transmission:

2.3.1 (*) *ALLISON WORLD TRANSMISSION* Model HD4560P 4 or 5-Speed electronic. 5 Speed Allison 4500 RDS transmission

2.3.2 To include Auto-Neutral feature that when the air parking brake is applied that the transmission automatically shifts into neutral.

2.3.3 To include oil level sensor option.

2.3.4 Any external lines to be steel or be steel braided.

2.3.5 To be compatible with engine.

2.4 Transfer Case:

2.4.1 (*) Two (2) speed with bevel gear differential.

Oshkosh 55000 Series two speed bevel gear differential

2.4.2 Lockout control to be located in cab.

2.5 Axles:

2.5.1 Front:

2.5.1.1 Single front driven steering axle with single tire design.

2.5.1.2 (*) To be rated at 27,000 pounds minimum.

Front axle rate at 27,000#

2.5.1.3 (*) ***If equipped with a snow blower loading chute or a runway and ramp snow plow:*** To be rated at 29,000 pounds minimum.

Front axle rated at 29,000# if used with blower loading chute, broom or plow

2.5.2 Rear:

2.5.2.1 Single rear driven steering axle with single tire design.

2.5.2.2 (*) To be rated at 23,000 pounds minimum.

Rear axle rated at 23,000#

2.6 Drive steer axles to include tapered roller trunnion bearings (or bronze bushings) (or combination tapered roller trunnion bearings and bronze bushings) to help eliminate excessive wear because of the side force exerted from blowing snow.

2.6.1 Axles to be certified by manufacturer as being suitable for use in this vehicle and be designed for single tire mounting. *Certification to be provided not later than pilot inspection*.

2.6.2 Front and rear tread widths not to vary more than two (2) inches. Wheel spacers shall not be used to obtain correct tread widths.

2.6.3 Must have sufficient weight on front axle to provide adequate steering and braking control when Tapley or Mew values are at 0.20.

2.6.4 Differential Locks:

2.6.4.1 (*) Front axle to have driver controlled differential lock.

Front axle will have driver controlled differential lock.

2.6.4.2 (*) Rear axle to have driver controlled differential lock.

Rear axle will have driver controlled differential lock.

2.7 Drive Lines: Shall include shielding or guards to prevent damage to specialized components, such as hydraulic components, in case of driveline failure.

2.8 (*) Unit shall be capable of being selected from the operator's position as a rear drive 4x2. Letter of clarification in bid file.

3.0 CHASSIS:

3.1 (*) GVWR: 50,000 pounds minimum. 50,000# GVWR - no chute.

3.2 ***If equipped with a snow blower spot cast/loading chute or a snow plow:***

3.2.1 (*) GVWR: 52,000 pounds minimum. 52,000# GVWR with chute.

3.3 (*) Wheelbase: Maximum 168 inches. 164 inches

3.4 (*) Ground Clearance: Minimum of eight (8) inches. 8 inches

3.5 Frame:

3.5.1 Straight steel frame.

3.5.2 (*) Yield Strength: 110,000 PSI, minimum. 110,111 PSI

3.5.3 (*) RBM: 2,580,000 inch pounds per rail, minimum.

2,818,000 inch pounds per rail

3.5.4 To be reinforced as required to prevent distortion under maximum loads experienced during operation of this vehicle.

3.5.5 (*) Overall frame width to be between 34 and 39 inches nominal to minimize wracking and torsional stress during operation. 34 inch

3.5.6 Frame assembly to include cross members in addition to engine and drive train components to provide lateral frame stability.

3.5.6.1 Cross members are to be bolt-on (welded is not acceptable).

3.5.7 Frame liners, wrappers, fish plating, and bolt-on extensions are not acceptable.

3.5.8 Welding to the frame is not acceptable.

3.6 Steering:

3.6.1 To be full power or hydraulic power assist.

3.6.2 To be capable of easily maintaining directional control during operation.

3.6.3 Components to be installed to protect against damage.

3.6.4 (*) All-Wheel steering is required, including the option of (a) front wheel steer, (b) crab, and (c) coordinate steering, all controlled through the cab steering wheel. Rear wheel steer to be controlled by joystick, independent of steering wheel.

Oshkosh all steer w/front crab coordinate steer controlled through cab steering wheel. Rear steer controlled w/joystick or steering wheel.

3.6.4.1 An indicator showing the rear wheel position shall be in easy view of the operator.

3.6.4.2 Safety lockout shall automatically limit the unit speed to 15 MPH if the steering mode is not in “front wheel steer”. The *OSHKOSH* Electronic All-Steer System is acceptable.

3.6.4.3 Mechanical or hydraulic locking system shall immobilize rear axle in the event of failure or deactivation.

3.6.5 For safety and emergency backup, mechanical linkage between front axle and cab mounted steering wheel shall be maintained at all times in all steering modes. An electric over hydraulic backup system may be provided, if valving and duplicate plumbing is installed, to guard against failure of hoses in the primary steering hydraulics’ system.

3.6.6 Steering axle ball ends shall be completely enclosed at all cramp angles to help prevent ice, slush, mud, etc from contacting the driveline joints. The entire moving drive-steer axle shaft should be enclosed within the steel ball end that functions as a grease reservoir.

3.7 Brakes:

3.7.1 To be S-Cam. Disc brakes are acceptable. (Wedge brakes are acceptable on the front axle only.)

3.7.2 Service Brakes:

3.7.2.1 (*) To include ABS system. ABS brakes.

3.7.2.2 Shall be full air.

3.7.2.3 Foot operated control, suspended or treadle type.

3.7.3 Parking Brakes:

3.7.3.1 To be activated by same chambers on rear axle.

3.7.3.2 When parking brake is activated, the automatic transmission is to be automatically shifted into neutral. Refer to Transmission.

3.7.4 Brakes, disc and/or drum, shall be enclosed and shielded to help protect against moisture and sand. Enclosed refers to the drum brake systems only. Disc brakes are to be shielded.

3.7.5 Braking system to meet FMVSS standards.

3.7.6 Air System:

3.7.6.1 Air Compressor: 13 (13.0) cubic foot per minute (minimum).

3.7.6.2 To include *BENDIX-WESTINGHOUSE* AD-IP or *MIDLAND* DA33100 or *ROCKWELL WABCO* SS1200, air dryer with moisture ejector.

3.7.6.3 Air Filtering Device: To include a BENDIX Puraguard System Filter installed between the engine air compressor and the air dryer.

3.7.6.4 Quick release or relay valves to be included for front and rear brakes.

3.7.6.5 Air Reservoir Tanks:

3.7.6.5.1 Heavy-duty, steel construction, primary and secondary, minimum 4,500 cubic inch capacity.

3.7.6.5.2 Primary air tank, to include a ¼ (one-quarter) turn ball valve with 3/8 (0.375) inch NPT threads, mounted on the outside of the left-hand side frame rail, easily accessible. Ball valve is to include a threaded plug.

3.7.6.5.3 Installed in protected locations.

3.7.6.5.4 Air tanks to have quick-drain to drain moisture from system, easily accessible from side of unit by ground personnel (a lanyard type cord may be necessary).

3.7.6.5.5 Safety overload valves to be included on air tanks.

3.8 Tires and Wheels:

3.8.1 (*) Five (5) each, including spare, aggressive snow tread design, radial tires, mounted on 10 hole (10 hole minimum) steel *BUDD* type rims (*OSHKOSH* and *STEWART & STEVENSON* split rims are acceptable). Tires and wheels to be adequately load rated for this application.

5 snow tread radial tires, 395/85r20 Michelin XZL mounted to 20.0 x 10.0 steel disc wheels with proper load rating.

3.8.2 **SPARE** tire with mounted wheel to be shipped loose. Spare must fit both axles.

3.8.3 All tires to be identical.

3.9 Suspension:

3.9.1 To be manufacturer's standard spring type.

3.9.2 Suspension will be designed to allow for proper operation of specified attachments.

3.9.3 The spring hangers, pins and supports shall be heavy-duty to give long life.

3.9.4 The pins shall be of the grease type with substantial bronze bushings.

3.10 Tow Hooks: Two (2) each, frame mounted, rear.

3.11 All fasteners to be grade eight (8), per SAE J429.

4.0 ELECTRICAL:

4.1 Master Electrical Switch:

4.1.1 Single high ampere master electric switch to cut off power source from battery to the ground (ground side if possible, positive side if not) and remainder of electrical system, *COLE HERSEE* #284-02 or *POLLACK* #51-315.

4.1.2 Located driver's side, in cab or near battery location, easily accessed, but not ordinarily visible to persons unfamiliar with vehicle.

4.2 Batteries:

4.2.1 To be maintenance free, group 31, with a total of 3,000 CCA at zero degrees Fahrenheit, minimum.

4.2.2 To be under hood or enclosed to prevent build up of snow on and around the battery terminals, but be easily accessible. If a roll-out tray is required, stainless steel glides will be used.

4.3 Charging System:

4.3.1 Alternator: Minimum 160 AMP, waterproof, carrier engine driven.

4.3.1.1 If an inverter is utilized in the system, the alternator size is to be minimum 270 AMP.

4.3.2 (*) High amperage draw (DC) heated windshield(s) to be powered by independent, dedicated alternator.

High amp draw (DC) heated windshield will be powered by an independent dedicated alternator.

4.3.3 (*) Any inverters used to power a 110-volt heated windshield are to provide an output waveform that has a pure sine wave and also that the unit supplied b UL approved. None used.

4.4 All electrical control switches to be direct current rated.

4.5 Circuit Breakers: To be located in an easily accessed weatherproof electrical panel.

4.6 Ignition Switch: *ECHLIN* Model KS120 or *COLE HERSEE* Model M-712.

4.7 Lighting System:

4.7.1 Headlights: Halogen, with High/Low beam.

4.7.2 Driving Lights: Two (2) each, halogen, amber, mounted on top front left and right of cab, *PERLUX* #600-2 or equivalent.

4.7.3 Stop, turn, tail, and marker lights to be LED.

4.7.4 Backup lights, 35 watt, halogen.

4.7.5 Turn Signals: Self-canceling with 4-way flashers.

4.7.6 Cab interior dome light. Light is to come on when opening door(s) and is to also be operated by a separately driver controlled switch.

4.7.7 Spot Lights: Two (2) each, halogen, six (6) inch round with chrome housing, 50 watt, 160,000 candlepower, cab controlled, mounted left and right, near cab roof, *UNITY* or equivalent.

4.7.8 Work Lights:

4.7.8.1 Two (2) each, HID flood (*J.W. SPEAKER* or equivalent), 35 watt, adjustable, rubber mounted left and right, front upper outside cab. To be facing forward. These lights are to include their own switch.

4.7.8.2 ***If equipped with an air blower system:*** Two (2) each, five (5) inch x three (3) inch (minimum size), 50 watt halogen flood, adjustable and rubber mounted left and right, mounted mid-ship. These lights are to include their own switch.

4.7.8.3 Two (2) each, five (5) inch x three (3) inch (minimum size), 50 watt halogen flood, mounted left and right, rear of unit. To be facing rearward. These lights are to include their own switch.

4.7.8.4 Lighted engine compartment(s), switched at compartment. Lights are to give more than adequate lighting. (Our winters are dark).

4.7.9 Strobe Lights:

4.7.9.1 Two (2) each, *WHELEN* Model S360D strobe lights mounted on cab roof, visible from all directions.

4.7.9.2 Two (2) each, *WHELEN* Model S360D strobe lights mounted on top rear of unit, shielded to prevent flashing of light into operator's cab.

4.7.9.3 Left lenses color to be amber, right lenses to be blue.

4.7.9.4 Switch control center with "HIGH/OFF/LOW" to be within easy reach of operator. Don't forget to label switch.

4.7.10 All other lighting to conform to FMVSS regulations.

4.8 Backup Alarm: Electronic, self-adjusting sound level, *ACORN PRODUCTS* Model 1D-112AA, *PRECO* Model Preco-Matic 1040, *STAR* Model Starmatic 63-000, or *WARN* Model Reactor 2100504, located on rear of unit per manufacturer's recommendations.

4.9 Wiring:

4.9.1 All wiring shall be color-coded or continuously numbered every 18 inches minimum.

4.9.2 Located for maximum protection from snow and ice build-up, grease, oil, fuel, and heat from engine and components.

4.9.3 Routing through structural members to be protected by grommets.

4.9.4 To be secured by clips at intervals to prevent rubbing or chafing due to movement.

4.9.5 All applicable junction boxes, light housings, etc. to be constructed of corrosion proof material.

4.9.6 Spade and bullet connectors are not acceptable.

4.9.7 Outside of the cab wiring:

4.9.7.1 All connectors to be corrosion resistant and waterproof.

4.9.7.2 *THERMOSEAL* and *WEATHER-PACK* type connectors are acceptable.

4.9.8 Non-Factory Wiring:

4.9.8.1 All dealer/vendor installed items, which require connecting into the vehicle's electrical system shall be done using an OEM factory modified wiring kit whenever possible. All non-factory wire connections (splices, connectors, etc." shall be soldered and shrink tube insulated with adhesive/metable sealant, thick wall polyolefin shrink tubing (3M EPS-300 or equal). No non-factory crimp connections allowed. No cutting or splicing into the factory wiring harnesses allowed. All electrical connectors shall have dielectric grease applied to terminals to help reduce corrosion.

4.9.8.2 All accessories (strobe lights, operator controls. Light bar, etc. shall be wired through a 12- volt DC constant duty solenoid and controlled by bus bar mounted and permanently labeled auto-resetting circuit breakers. The solenoid shall be wired to the key switch.

4.9.8.3 All non-factory wiring shall be encased in a totally sealed wiring harness (no plastic split loom) to help prevent corrosion from magnesium chloride or urea. The wiring harness shall be well secured to the truck with neoprene aircraft stainless steel tubing clamps. Rubber grommets shall be used at all areas where the wiring passes through areas that could damage the wiring.

5.0 CAB:

5.1 The cab shall be positioned behind the blower chute or volute; cab over design is not acceptable.

5.2 (*) Cab Shoulder Width: Minimum 56 inches and maximum of 72 inches, wide enough for a two (2) man cab, but narrow enough for adequate visibility to the left and right for the operator.

60 inch cab width, two man with operator visibility left and right

5.3 Noise Suppression/Winterization:

5.3.1 Sides and ceiling shall have sound suppression material, approximately one (1.0) inch thick, perforated vinyl covered foam.

5.3.2 Floor and firewall to be insulated with closed cell foam and covered with rubber matting.

5.3.3 Rubber matting on floor will be slip resistant.

5.4 Heater and Defroster:

5.4.1 Must keep cab temperature at 50 degrees while exterior is at minus 40 degrees, Fahrenheit.

5.4.2 Primary Heater:

5.4.2.1 Minimum 200 BTU per cubic foot of cab volume or have a rating of 48,000 BTU (whichever is greater).

5.4.2.2 To be fresh air type with defroster ducts to front windshields and right and left side windows.

5.4.3 Auxiliary Heater:

5.4.3.1 Minimum 200 BTU per cubic foot of cab volume or have a rating of 33,000 BTU (whichever is greater)

5.4.3.2 To be fresh air type, independently controlled.

5.4.3.3 If two (2) engine design, the auxiliary heater to be plumbed from the blower engine.

5.4.4 Plumbing for heaters on single engine units are to plumbed in series.

5.4.5 Heaters are to include independent temperature settings (utilizing carrier's hot engine coolant).

5.4.5.1 Main heater to include minimum three (3) speed fan motor(s).

5.4.5.2 Auxiliary heater may be single speed.

5.4.6 Heater hoses are to include valves near the inlets and outlets of the heaters for use when maintenance is required on the heater preventing excessive coolant loss. Valves are to be easily accessed.

5.4.7 Caged Defroster Fans: Two (2) each, dash or upper windshield mounted, two (2) speed, independently controlled.

5.5 **Air conditioning (*OPTIONAL – Pricing provided – See Section III –Price Schedule*):**

5.5.1 To be internal. Roof mounted is not acceptable.

5.6 All outside air (fresh air) brought into the cab through heater and air conditioner system is to be filtered by an easily replaceable air filter(s).

5.7 Glass/Windows:

5.7.1 All glass to be tinted (stick-on type is not acceptable) safety glass.

5.7.2 Front windshield(s) to have a reverse slope to minimize glare.

5.7.3 Front windshield to have a minimum of two (2.0) square feet of glass area for every foot of cab width, for maximum visibility.

5.7.4 All glass shall be flat to allow economical local replacement.

5.7.5 Front windshield(s) shall be heated by electrical lamination. Glue-on heat strips are not acceptable.

5.7.6 Front windshield and side windows to include driver's area sun visor, fold-up style, green or gray tinted visor.

5.7.7 Driver and passenger side windows to be pop-open vent type or power up/down.

5.8 Wipers:

5.8.1 Electric powered multiple speed wipers with intermittent feature and include wet arm washer(s) on front windshield(s).

5.8.2 Side window wipers (on both left and right).

5.9 Deluge System:

5.9.1 Minimum 20 gallon capacity system is required with dedicated pump for visibility enhancement. The washer solvent shall be directed at each side window, each outside mirror, and the front cab glass by means of a minimum six (6) each dedicated nozzles. This is in addition to normal wet arm wiper systems.

5.10 Seats:

5.10.1 Driver's seat, medium or high-height back, premium, 6-way adjustable, with adjustable lumbar support, air ride suspension.

5.10.2 Passenger seat to be manufacturer's standard.

5.10.3 Seat upholstery to be fabric (cloth). Naugahyde or vinyl not acceptable.

5.10.4 Both seats to have seat belts and shoulder strap(s). Shoulder strap(s) may be three (3) point type.

5.11 Entry:

5.11.1 To have raised lug or expanded metal construction steps.

5.11.2 Grab handles to be provided to assist in entering or leaving cab, or gaining access to catwalk(s) around engine compartment (if so equipped).

5.11.3 For future reparability, door hinges shall not be welded to the cab frame and the door.

5.11.4 For extended door life, door hinges shall extend the full height of the doors(s). Intermittent hinges are not acceptable.

5.11.5 Door stop webbing, minimum two (2) each, on each door, to prevent strong winds from "over opening" of doors.

5.12 Rear View Mirrors:

5.12.1 *METEGAL* or *RETRAC* or *MOTO MIRROR PLUS*, exterior rear view mirrors, heated, electrically powered (vertically and horizontally), combination including upper standard lens and lower convex lens, fully adjustable, 15x8 inches minimum. Mirrors to include stainless steel or painted steel brackets, at a minimum, with the mirror's body material being stainless steel or ABS type.

5.12.2 Electrical for heat to mirrors to include a dash mounted independent switch.

5.13 Steering wheel to be tilt and telescoping type.

5.14 Gauges/Indicators and Controls:

5.14.1 All gauges, indictors and controls mounted in the cab are to be within easy reach and view of the operator.

5.14.2 Hinged or front serviceable type with a full complement of gauges or indicators, as specified, including as a minimum:

1.1.1.1 Any and all gauges that show pressure, temperature, etc., are to be in U.S.A. measurements such as PSI, Fahrenheit, etc.

1.1.1.2 Hour Meters (One each for both engines): To include an *ENM* Model PT-12 LCD programmable engine hour meter, running engine activated. Meter is to be capable of displaying 99,999 hours.

ENM

Phone: 773-775-8400

www.enmco.com

5.14.2.1 Audible and visual (red or yellow in color) warning system for low engine oil pressure and high engine coolant temperature (both engines).

5.14.2.2 Voltmeter or ammeter gauge (for each alternator, if applicable).

5.14.2.3 Air pressure with visual (red or yellow in color) and audible low air pressure warning (if air system is utilized).

5.14.2.4 Engine oil pressure gauge with warning light (both engines, red or yellow in color).

5.14.2.5 Fuel gauge.

5.14.2.6 Engine coolant temperature gauge (both engines).

5.14.2.7 Tachometer (both engines).

5.14.2.8 Speedometer and odometer.

5.14.2.9 Transmission temperature warning light (red or yellow in color).

5.14.2.10 Hydrostatic fluid low-level warning light (if applicable, red or yellow in color).

5.14.2.11 Parking brake warning light (red or yellow in color).

5.14.2.12 DCDL (Driver Controlled Differential Lock) ON/OFF switch with ENGAGED (Orange) indicator light for forward rear drive axle.

5.14.2.13 DCDL (Driver Controlled Differential Lock) ON/OFF switch with ENGAGED (Orange) indicator light for rear drive axle.

5.14.2.14 Work light switches.

5.14.2.15 Control to change from 4x4 to 4x2 mode with indicator light (yellow or orange if 4x2 or green if 4x4 in color) to indicate which mode the unit is in.

5.14.3 All gauges to be lighted from behind.

5.14.4 All switch identifications are to be lighted.

5.14.5 All switches, gauges and controls to be properly identified.

5.14.5.1 *DYMO* type tape labels are not acceptable.

5.14.5.2 Stick-on type labels are not acceptable; however, labels with OEM part numbers that are parts manual listed are acceptable.

5.14.6 Toggle switches controlling electrical components to be metal (plastic is not acceptable). Rocker type switches may be plastic or metal.

5.14.7 Self-canceling turn signals with hazard switch.

5.15 Horn: Mounted on top or side of cab, with decibel rating of approximately 130. To be chrome and include snow shield.

5.16 Hydraulic hoses are not to enter the operator's cab.

6.0 BODY:

6.1 Engine Compartment(s):

6.1.1 Fully enclosed with easily removable access doors on left and right sides, or tilt hood, or hinged doors. Hinged doors are to be bolt-on (welded-on doors are not acceptable.

6.2 Shall provide adequate access to the top, left, and right sides, for maintenance.

6.2.1 Walkways to be of raised lug or expanded metal construction.

6.2.2 Walkways shall include minimum one (1) inch tubular, 42 inches in height, handrails or guardrails and be included for steps that access walkway.

6.3 Anti-Sail mud flaps, front and rear (if lower edge of fender is more than 23 inches from ground).

6.4 Steel fenders over front and rear wheels. Fenders to be fully undercoated.

6.5 Self-tapping bolts used in sheet metal construction are not acceptable.

6.6 Top access door, or tilting hood, or removable engine enclosure with lifting eyes (if possible) to accommodate engine removal.

7.0 POWER TRAIN – SNOW BLOWER, BROOM, AND AIR BLOWER:

7.1 (*) Engine: Diesel, water-cooled, four (4) cycle, electronically controlled, 15.0 liter minimum displacement, **525** SAE net horsepower minimum, 1770 pound foot torque minimum. Not to exceed 2,100 RPM. Engine to be capable of performance requirements cited later in this specification. ***(For minimum 4,000 ton-per-hour snow blower)***. Cat C15 525 hp, reference brochure in bid file.

7.2 (*) Engine: Diesel, water-cooled, four (4) cycle, electronically controlled, 14.0 liter minimum displacement, **650** SAE net horsepower minimum. Not to exceed 2,300 RPM. Engine to be capable of performance requirements cited in this specification. (For minimum 5,000 ton-per-hour snow blower). ***(For minimum 5,000 ton-per-hour snow blower)***. Cat c16 650 hp, reference brochure in bid file.

7.3 (*) ***If dedicated brooming application with a minimum 2650 pound foot of torque at the broom:*** Engine: Diesel, water-cooled, four (4) cycle, electronically controlled, 11.1 liter minimum displacement, **380** SAE net horsepower minimum. Not to exceed 2,100 RPM. Engine to be capable of performance requirements cited in this specification. Letter of clarification from M-B Co. in bid file.

7.4 (*) ***If dedicated brooming application with a minimum 4800 pound foot of torque at the broom:*** Engine: Diesel, water-cooled, four (4) cycle, electronically controlled, 12.5 liter minimum displacement, **470** SAE net horsepower minimum. Not to exceed 2,100 RPM. Engine to be capable of performance requirements cited in this specification. Letter of clarification from M-B Co. in bid file.

7.5 Engine, General:

7.5.1 All engine controls, gauges and indicators will be carrier cab mounted and provide easy view and operation of by the operator. Refer to requirements in CAB section of this specification.

7.5.2 Governor will be of the correct type to control and limit engine speeds as recommended by the engine, driveline, and power train component manufacturers for its intended use in this vehicle.

7.5.3 To be equipped with electronic or air high idle circuit, to maintain approximately 1200 rpm (for warm-up purposes. Cable type control is not acceptable.

7.5.4 Engine shall meet current EPA off-highway emission requirements at time of delivery.

7.6 Engine Cooling System:

7.6.1 Permanent type antifreeze to minus 60 degrees Fahrenheit.

7.6.2 The radiator shall be a tube and fin type and be capable of maintaining the correct operating temperature under all conditions encountered without dependence on other systems to provide cooling. If cooling system incorporates the use of shutters or other method of diverting air to either the radiator or engine air intake, these systems shall operate consistent with the engine manufacturer's recommendations.

7.6.3 A coolant circulation bypass will be provided to allow coolant to circulate within the engine block while thermostat is closed.

7.6.4 Drain cocks will be provided at the low point of radiator and engine block.

7.6.5 Filtration: To be spin-on type.

7.6.6 Radiator to be mounted securely on vibration dampening mounts.

7.6.7 Hoses: *GATES* Bluestrip, or GATES Greenstripe, or silicone, to be provided on all radiator and heater hoses.

7.6.8 Clamps utilized on engine coolant lines one (1) inch inside diameter or larger are to be *CONSTANT-TORQUE* or equivalent, stainless steel.

7.6.9 Airflow through engine compartment will be such that compartment maintains a positive pressure to prevent compartment from becoming filled with dry snow or other contaminants.

7.6.10 To include a coolant level sight gauge, easily seen by maintenance personnel while checking engine oil level.

7.6.11 To include engine manufacturer's certification that the engine will maintain, but not exceed, a continuous operating temperature, as an operational unit, with a wide range of ambient temperatures to as low as minus 40 degrees Fahrenheit. *Certification to be provided not later than pilot inspection*.

7.7 Engine Cold Starting Aids:

7.7.1 Automatic electronic ether injection system, *KBI* Dieselmatic, *TURNER* Quick Start, or equivalent.

7.7.1.1 To be wired through starter button.

7.7.1.2 To include an engine sensor switch.

7.7.1.3 System to be installed in engine compartment and have maximum protection from the elements.

7.7.2 Engine Block Heater: Immersion type, maximum wattage available, 110 volt AC (OEM if available).

7.7.3 Engine oil pan heater, one (1) each, 300 watt, 110 volt AC, silicone pad heater bonded to oil pan, *BESCO*, *KAT'S, WATLO,* or equivalent.

7.8 Engine Intake Air System:

7.8.1 Must have two (2) stage (dual element) air cleaner(s).

7.8.2 Air filter restriction indicator, dash-mounted with audible alarm.

7.8.3 (*) Air intake may include a dual inside or outside system that will allow inside air intake when outside ambient temperature is 40 degrees Fahrenheit or below, or outside air intake when outside ambient temperature is above 40 degrees Fahrenheit. The process of changing from inside to outside or vice versa shall not require any tools. Time involved should not take more than five (5) minutes, even in the most extreme weather conditions. The *OSHKOSH* automatic system is acceptable.

Oshkosh automatic system with inside/outside air box that controls air intake for optimum amount of power out of engine. See M-B Co. letter of clarification in bid file.

7.8.3.1 If outside air, even with the *DONALDSON* system, the unit must include a *SURECO* Turbo II or *SURECO* Power Ram or *ENGINAIR* system.

7.9 Engine Exhaust System:

7.9.1 Exhaust system to be designed to prevent rain, snow, or slush from entering exhaust system.

7.9.2 Exhaust piping to be located away from cab and be heat shielded if vulnerable to maintenance personnel.

7.9.3 Horizontal exhaust piping shall be shielded to prevent spilled flammable fluids from contacting surface, where applicable.

7.9.4 Mufflers and tailpipe will be designed to minimize noise without causing excessive backpressure.

7.10 Engine Fuel System: Fuel will be drawn from same tank(s) as carrier.

7.11 Engine Oil Filtration: Oil filters to be spin-on type.

8.0 WEIGHT TRANSFER SYSTEM (*If available*):

8.1 To increase traction to the carrier and reduce wear and tear on caster wheels, the carrier is to be equipped with a weight transfer system, which, when set from the operator's position, automatically maintains minimum 60% (sixty-percent) of the blower and/or broom head or snow plow weight to the chassis.

8.1.1 This shall be accomplished hydraulically by sensing the system pressure and continually adjusting the pressure via electronically controlled hydraulic metering valves.

9.0 HYDROSTATIC SYSTEMS (BROOM, FORCED AIR BLOWER, SNOW BLOWER AND RUNWAY BROOM:

9.1 Hydraulics will be provided to power all attachments as ordered.

9.2 For high-speed transport, hydraulics, powered by the carrier engine shall be able to lift the blower head assembly completely off the ground.

9.3 Weight transfer system hydraulics to be powered by the carrier engine.

9.4 Quick hitch hydraulics to be powered by the carrier engine.

9.5 **Broom (*when ordered*):**

9.5.1 Brush rotation, brush lift, deflector positioning, and reversing functions.

9.5.2 (*) A variable displacement hydraulic pump that is driven by the auxiliary engine will supply hydraulics to the hydraulic motors.

Letter of clarification from M-B Co. in bid file.

9.6 **Forced Air Blower (*when ordered*):**

9.6.1 Blower fan rotation and air ducting functions.

9.7 (*) Hydraulics to be powered by auxiliary engine, independent of broom hydraulics.

Forced air blower hydraulics will be powered by an auxiliary engine and are independent of broom hydraulics. Letter of clarification from M-B Co. in bid file.

9.8 **Snow Blower (*when ordered*):**

9.8.1 (*) A variable displacement hydraulic pump that is driven by the auxiliary engine will supply hydraulics to the hydraulic motors.

Blower engine drives blower hydraulics.

9.8.2 (*) The first stage ribbon shall be driven hydrostatically from both right and left sides and be protected by hydrostatic reliefs and have full torque reverse capabilities. Chain(s) is/are not acceptable.

First stage ribbon is driven from both sides with hydrostatic reliefs and full torque reverse capabilities.

9.9 (*) Pumps: Direct driven, variable displacement piston. Engine driven auxiliary is acceptable. Belt or chain driven is not acceptable. To be *SAUER-DANFOSS* or *REXROTH*. Dedicated broom pumps will be Sauer-Danfoss.

9.10 (*) Motors: To be *SAUER-DANFOSS* or *REXROTH*.

Dedicated broom motors will be Sauer-Danfoss.

9.11 Hydraulic Reservoir(s):

9.11.1 Designed for adequate cooling and shall be properly baffled.

9.11.2 Suction strainer, 100 mesh minimum, with sump area and provisions made for easy cleaning.

9.11.3 Sight gauge located above pump level.

9.11.4 Equipped with a filler neck with strainer and air vent.

9.11.5 Drain to be equipped with a ¼ (one-quarter) turn ball shut-off valve (easily accessed). An extension hose, or piping, may be required to allow draining of oil into a bucket or pan that would be positioned at ground level. The ball valve, end of the hose, or piping would require a cap or plug.

9.12 Hydraulic Filtration:

9.12.1 Spin-on filter(s), with properly rated no flow restriction check valves installed to isolate filter(s) for servicing or filters to be located above the hydraulic tank to reduce oil loss during servicing.

9.12.2 Filtration to be in compliance with SAE J931.

9.13 To include hydraulic pump manufacturer's certification that the hydraulic system will maintain, but not exceed, a continuous operating temperature, as an operational unit, with a wide range of ambient temperatures to as low as minus 40 degrees Fahrenheit. *Certification to be provided not later than pilot inspection*.

10.0 HYDRAULIC SYSTEM FOR AIRPORT RUNWAY AND RAMP PLOWS (*When ordered as dedicated runway and ramp plow truck*):

10.1 Hydraulics will be provided to power all plow functions.

10.1.1 The 18 foot ramp plow will require hydraulics for quick attachment of the plow and for plow lift.

10.1.2 The 24 foot runway plow will require hydraulics for quick attach, plow lift, right and left reverse, folding of left and right moldboard ends from a working position to a transport and storage position and visa versa.

10.2 (*) Pumps: Direct driven, variable displacement piston. Engine driven auxiliary is acceptable. Belt or chain driven is not acceptable. To be *SAUER-DANFOSS* or *REXROTH*. Direct driven Sauer-Danfoss will be used.

10.3 Hydraulic Reservoir:

10.3.1 Designed for adequate cooling and shall be properly baffled.

10.3.2 Capacity: Minimum 40 gallons.

10.3.3 Suction strainer, 100 mesh minimum, with sump area and provisions made for easy cleaning.

10.3.4 Sight gauge located above pump level.

10.3.5 Temperature gauge.

10.3.6 Equipped with a filler neck with strainer and air vent.

10.3.7 Drain to be equipped with a ¼ (one-quarter) turn ball shut-off valve (easily accessed). An extension hose, or piping, may be required to allow draining of oil into a bucket or pan that would be positioned at ground level. The ball valve, end of the hose, or piping would require a threaded cap or plug.

10.4 Hydraulic Filtration:

10.4.1 Spin-on filter(s), with properly rated no flow restriction check valves installed to isolate filter(s) for servicing or filters to be located above the hydraulic tank to reduce oil loss during servicing.

10.4.2 Filtration to be in compliance with SAE J931.

10.5 Hydraulic Control Valve:

10.5.1 Unloader valve to be provided to allow line pressure to return to standby pressure after a function has been completed.

10.5.2 Each valve section shall have electrical control and have individual pressure compensation to achieve independent simultaneous operation.

10.5.2.1 See exception to lock pins below.

10.5.3 All valve functions are to have heavy-duty coils and operate at 12-volts DC.

10.5.4 Hydraulic valve shall have pre-wired harness and be mounted in a weather-tight enclosure.

10.5.5 Hydraulic valves as follows:

10.5.5.1 4-way section - power up and down with float. (To be proportional in manual mode.)

10.5.5.2 4-way section - left folding moldboard end, in and out.

10.5.5.3 4-way section - right folding moldboard, in and out.

10.5.5.4 4-way section - plow angle, left and right. (To be proportional in manual mode.)

10.5.5.5 4-way section – hitch lock / unlock.

10.5.6 Controls for hydraulic valves:

10.5.6.1 Dual axis joystick with automatic and manual proportional control of plow up and down and plow angles.

10.5.6.1.1 Automatic one (1) touch microprocessor controls (no relays) for plow raise / lower and plow angle to provide hands-free operation throughout the entire cycle.

10.5.6.1.2 Moving the joystick in the opposite direction can reverse the cycle.

10.5.6.1.2.1 Rocker switch to select automatic or manual control of plow up / down and plow angle.

10.5.6.2 Two (2) self-centering rocker switches, non-proportional, to control plow wing right and wing left.

10.5.6.3 Controls to be mounted to right of operator in cab's existing console.

10.5.6.4 Rocker switch for hitch lock / unlock.

10.5.7 A proximity sensor with confirmation light in the cab shall also be provided to confirm the pins are in a locked position.

10.6 Controls:

10.6.1 The operator's control shall be integrated with the chassis and plows. All switches shall be lighted rocker style. It shall have all necessary functions to operate the plow and shall have the following:

10.6.1.1 Joystick for raise, lower, swing left/right.

10.6.1.2 Switch for plow float, ON/OFF, to be located on the joystick.

10.6.1.3 Switch for left folding moldboard end, extend/retract.

10.6.1.4 Switch for right folding moldboard end, extend/retract.

10.6.1.5 Low hydraulic oil level warning light.

10.6.1.6 Switch for hitch, LOCK/UNLOCK.

10.6.1.7 Hitch pin lock, engaged/disengaged, with disengaged (red or yellow in color) warning light.

10.6.1.8 In-cab warning light to indicate left or right folding moldboard section not in operating position.

10.6.1.9 In-cab indicator light for when moldboard reaches bull doze position so that moldboard ends can be folded.

10.7 Multi-Coupling Plate:

10.7.1 The multi-coupling plate is a tool allowing the simultaneous couple and uncouple of the hydraulic lines used for all plow hydraulic functions <u>on both plows</u>.

10.7.2 A vented coupler manifold is to be used to release residual pressure prior to disconnecting hydraulic quick-couplers.

10.7.2.1 It shall also allow for displacement of fluid in the lines during connection.

10.7.2.2 No more than six (6) hydraulic connections are to be made with each manifold. If more than six (6) lines need to be connected, additional manifolds are to be used (or a Multi-Coupling Plate) on all hydraulic lines that need to be separated from carrier when an attachment is removed.

10.7.3 (*) To be *STUCCHI*. <u>Will be</u> <u>Stucchi.</u>

10.7.4 *STUCCHI* is available through *COMPONENT TECHNOLOGY*; contact Steve Lovercheck at (402)349-0900 or (800)333-7411.

10.7.5 To include quick coupler caps or plugs with cable or chain type retainer regardless of system used.

10.8 The system shall be capable of positioning the hydraulic actuated equipment in any chosen position within the design limits of travels.

10.9 The system shall be of such capacity that all controls can be operated simultaneously without noticeable reduction in response.

10.10 Hydraulic system shall be constructed to withstand all loads imposed in snow removing operations without the use of mechanical locks.

10.11 Hydraulic lines shall be of sufficient size to permit free flow of hydraulic fluid at temperatures down to minus 40 degrees Fahrenheit.

10.12 To include hydraulic pump manufacturer's certification that the hydraulic system will maintain, but not exceed, a continuous operating temperature, as an operational unit, with a wide range of ambient temperatures to as low as minus 40 degrees Fahrenheit. *Certification to be provided not later than pilot inspection*.

11.0 SNOW BLOWER *(OPTIONAL -Pricing is required – Refer to Section III – Price Schedule)*:

11.1 To be a heavy-duty two-stage system capable of producing 5,000 TPH (ton-per-hour). Refer to SNOW BLOWER PERFORMANCE SPECIFICATIONS later in this specification.

11.2 Drive System:

11.2.1 (*) To consist of a two (2) speed, pressure lubricated, full torque, drop box and a three (3) plate 14-inch diameter clutch, minimum. The use of an *EATON-FULLER* Model RTLO-22918B in conjunction with an *EATON-FULLER* Solo XL Model 109706-22 2-plate clutch assembly is acceptable.

Two speed pressure lubricated, full torque drop box with a 14 inch clutch.

11.2.1.1 Clutch is to be manual or power assist engagement from the cab.

11.2.2 Drive Lines: To be heavy-duty, compatible with torque ratings commensurate with the load imposed.

11.2.3 (*) Impeller drive shall be direct mechanical.

Impeller drive is direct mechanical

11.2.4 (*) Ribbon drive shall be hydrostatic. Ribbon drive is hydrostatic.

11.2.5 (*) Shear pins shall be located at the furthest point from drive mechanism so as to minimize damage to drive train components. The shear pins shall also incorporate replaceable shear pin bushings. Shear pins are to include a relief cut in the shear area (standard off the shelf bolts are not acceptable).

Shear pins are located at the output flange of the impeller drop box. Shear pins have a relief cut in the shear area.

11.2.5.1 **SPARE** Shear Pins: To include 25 complete sets including bushings.

11.2.6 Hydrostatically driven components shall be protected by proper hydraulic relief circuits.

11.3 Snow Blower Head:

11.3.1 Ribbon (Reel) Configuration:

11.3.1.1 Diameter: Minimum 52 inches.

11.3.1.2 Ribbon type first stage is required to feed the second stage impeller. Two (2) stage design required, impeller and ribbon/auger to be independent components.

11.3.1.3 Power flow shall drive the ribbon from both left and right sides.

11.3.1.4 The ribbons (cutter blades) shall have serrated leading edges. They shall be in two (2) sections (minimum) per side for ease of replacement.

11.3.1.5 Ribbon to be a closed or open center design.

11.3.2 Impeller (fan) Configuration:

11.3.2.1 Diameter: Minimum 59 inches.

11.3.2.2 Fabricated construction. Cast construction is not acceptable.

11.3.2.3 Five (5) paddles minimum, individually replaceable, attached with countersunk fasteners (if fasteners are on the face of the paddle).

11.3.2.3.1 Shall be made of 1/2 (0.5) inch thick ductile iron or steel, or 1/4 (0.25) inch thick AR-360 steel.

11.3.2.4 Snow volute controllable from the cab, rotating through a minimum of 125 degree arc, left to right. Flat casting to be to the right.

11.3.2.5 Impeller housing shall be constructed with a removable liner for protection and friction reduction (poly type is not acceptable).

11.3.2.5.1 Housing liner to be 3/16 (0.1875) inch thick AR-360 steel.

11.3.3 Caster Wheels:

11.3.3.1 To include, minimum of two (2) each, 360 degree swiveling, minimum 10-inch diameter x minimum five (5) inch wide, steel caster or foam filled wheels. Vulcanized rubber on steel is not acceptable.

11.3.3.2 The caster wheels shall be capable of supporting the entire weight of head.

11.3.3.3 To include a screw type adjustment for adjusting the height.

11.3.3.4 **SPARES:** To include two (2) each additional, spare caster wheel assemblies (meaning totally assembled and ready to bolt-on to the anti-shimmy damper), which include the applicable; wheels with tires and tubes, bearings, axles, and hub

assemblies. Mounting hardware, nuts, bolts, washers, etc. are to be included. To be shipped loose.

11.3.4 Skid Shoes:

11.3.4.1 In addition to the caster wheels, the rotary head shall have adjustable **carbide** skid shoes located at each side of the rotary head, behind the cutting edge inside the width of the rotary head.

11.3.4.2 To include a screw type adjustment for adjusting the height.

11.3.5 For high-speed transport, hydraulics, powered by the carrier engine shall be able to lift the blower head assembly completely off the ground.

11.4 **Spot Casting/Loading Chute *(OPTIONAL - Refer to Section III - Price Schedule)*:**

11.4.1 A fixed (one piece), heavy-duty, mounted spot casting/loading chute shall be supplied, such that the impeller discharge may bypass the chute and discharge (flat cast) to the right and maintain the minimum 125 degree arc as specified above.

11.4.2 The chute shall rotate minimum 180 degrees with a hydraulic motor, chain driven, and heavy-duty bearing system (wire or cable is not acceptable).

11.4.3 All chute functions to be operated utilizing electrical over hydraulic control valves.

11.4.4 Hydraulics to utilize main carrier hydraulic system (a separate electric pump is not acceptable).

11.4.5 The directional control chute to be equipped with a hydraulic operated deflector flap, capable of discharging the snow from 65 degrees from vertical to a 40 degree downward angle for precision spot casting or loading trucks.

11.4.6 Liner:

11.4.6.1 The inside back of the chute to be lined with ½ (0.5) inch thick *TYVAR 88* or *TYVAR* 88 equivalent, or 3/16 (0.188) inch thick AR-360 steel (full length, but not including deflector flap).

11.4.6.2 The liner is to be bolted in, using stainless steel, aircraft style, flat head, 1/4 (0.25) inch diameter minimum, flat head socket cap screws with countersunk washers, providing a flush surface. To be on 12 inch centers, minimum.

11.4.7 Height:

11.4.7.1 (*) Overall: Top of chute must not exceed 162 inches from ground level in the operating position, head in float. 162 inches.

11.4.7.2 Unit to be capable of easily loading into 12 to 20 cubic yard dump trucks with up to nine (9) foot high side boards with a minimum distance of four (4) foot away from the right or left side of the snow blower head.

12.0 18 FOOT RUNWAY BROOM ATTACHMENT (State Class #548) *(Refer to Section III - Price Schedule)*:

12.1 It is the intent of this specification to describe an 18-foot in length x 46 inches in diameter broom.

12.2 General:

12.2.1 Shall be of any suitable design, pushed by the cab forward propulsion vehicle, allowing the operator to directly observe the area being swept.

12.2.2 (*) Core(s) shall provide an 18-foot sweeping width at 90 degrees.

Will have a 18-feet sweeping width at 90 degrees.

12.2.3 (*) Broom head must be capable of being angled a minimum of 35 degrees, to either side.

Will be capable of being angled a minimum of 35 degrees to either side.

12.2.4 Broom lift, rotation and angling will be accomplished hydraulically.

12.3 Brush and Brush Drive:

12.3.1 (*) To provide a minimum 2650 pound foot torque with minimum 380 HP auxiliary engine.

M-B broom will produce 2656 ft-lb of torque using a Cat C11 385 hp engine, Reference calculation and specification sheets in bid file.

12.3.2 (*) To provide a minimum 4800 pound foot torque with minimum 470 HP auxiliary engine.

M-BHP3 broom produces 4828 ft-lbs of torque using a Cat C13 475 hp engine. Reference calculation and specification sheets in bid file.

12.3.3 Brush shall be rotating horizontal cylinders, replaceable core type with bearings and supports at both ends.

12.3.4 Brush shall be the stacked wafer type. Strip cores are not acceptable.

12.3.5 The brush shall be driven by hydrostatic drive motor(s), end or center mounted to the brush cores to properly distribute drive torque through the broom head.

12.3.5.1 Cores to be dynamically balanced.

12.3.6 Brush shall be capable of varying rotational speeds, from within the cab, up to 475 RPM to compensate for brush wear.

12.3.7 The cylindrical shaped brush shall consist of two (2) each, approximately nine (9) foot, in length, cores with 46 inch, in diameter, wafers.

12.3.8 Bristles shall be fastened in a radial wafer utilizing a neoprene liner to dissipate heat and cushion shock loads generated from sweeping.

12.3.9 Brush shall have the necessary degree of freedom to follow changes in elevation of the pavement being swept, while sweeping either left or right at the rated sweeping speed.

12.3.10 Brush shall sweep the same path whether angled left or right.

12.3.11 The brush fill shall be mixed (50/50), alternating sections of polypropylene and steel wire.

12.3.11.1 The poly bristles (8.25 pound) shall be 0.060 x 0.090 inch oval shape.

12.3.11.2 The wire (10 pound) shall have an average diameter of 0.018 inch, galvanized or stainless steel.

12.3.11.3 **SPARES:** One (1) each, full set of poly and one (1) each, full set of wire shall be included (shipped loose, not mounted).

12.3.12 Brush Replacement:

12.3.12.1 The assembly shall permit field replacement of brush inserts with maximum ease without special hand tools.

12.3.12.2 If core(s) must be removed to replace brushes, the contractor must supply means to assist in replacement of brushes.

12.3.12.3 Two (2) each carts, with caster wheels, must be provided for each broom core section. No other special tools are to be required.

12.3.12.4 **SPARES:** Additional, one (1) each, core(s) (left and right if applicable) are/is required (shipped loose, not mounted).

12.3.13 A hydraulic elevation mechanism shall provide adequate ground clearance for transport when not in use.

12.3.14 An easily accessible fine height adjustment shall be provided to compensate for brush wear.

12.4 Hood and Deflector:

12.4.1 A heavy gauge sheet steel brush hood shall be securely bolted to the brush frame and be adjustable to within 3/8 (0.375) inch of the brush bristles.

12.4.2 The hood shall be designed to prevent ice buildup during freezing slush removal operations at rated speeds.

12.4.3 The adjustable hood shall incorporate an adjustable and replaceable (bolt-on) snow stripper to prevent carry over of snow and clogging of snow in heavy snow conditions.

12.4.4 A snow deflector shall be mounted on the front of the brush hood and be capable of changing the angle at which snow leaves the brush. The deflector's angle is to be controlled hydraulically from the operator's seated position from within the cab.

12.5 Castor Wheels:

12.5.1 The broom shall have a minimum of two (2) caster wheel assemblies with dual or single tires, or a quantity of four (4) single tires, located behind the head and inside the sweeping path.

12.5.2 Casters shall be of the full 360 degree revolving type and include friction shimmy dampers as needed.

12.5.3 Dual tire caster axle design is also to oscillate a minimum of seven (7) degrees, both left and right of center.

12.5.4 Hubs must be demountable with steel rims.

12.5.5 Tires to be minimum 180/70R8 (18x7xR8), 16 ply for increased resistance to extreme side turning loads. Tires to be nitrogen filled with tube.

12.5.6 Tires and wheels are to be rated by tire and wheel manufacturer to operate at speeds up to 35 MPH with loads and pressures imposed during normal sweeping conditions.

12.5.6.1 **SPARES:** To include two (2) each, complete caster wheel assemblies ready for bolt-on to the anti-shimmy damper. This includes nitrogen filled tires with tubes that are mounted onto the wheels that are mounted to the hubs that include bearings that are mounted onto the axles, etc. Mounting hardware, nuts, bolts, washers, etc. are to be included.

12.6 Frame:

12.6.1 Frame shall be fabricated of heavy gauge tubular or channel section steel, reinforced to prevent loading distortion and include adequate cross section modulus to ensure no torsion distortion during normal operation.

12.7 Hitch:

12.7.1 To allow the broom to be centered to eliminate an uneven strike pattern of the brush or broom core.

12.7.2 All components used in the construction and design of broom hitch shall have a minimum useful life of 1000 hours of operation under normal sweeping conditions.

12.7.3 Also refer to Quick Attach Hitch System later in this specification.

12.8 Controls:

12.8.1 Controls for the broom in the operator's cab shall include:

12.8.1.1 Variable brush speed control, up to a maximum of 475 RPM.

12.8.1.2 Broom angle.

12.8.1.3 Snow deflector.

12.8.1.4 Broom lift.

12.8.1.5 Necessary instrumentation for broom operation.

13.0 FORCED AIR BLOWER SYSTEM *(OPTIONAL - Refer to Section III - Price Schedule)*:

13.1 Blower:

13.1.1 Capacity: Minimum 22,820 CFM air volume rated at inlet side of blower.

13.1.2 To be centrifugal type blower with double outlets located left and right of the unit.

13.1.3 To be direct driven and mounted to the hydrostatic motor drive.

13.1.4 Air intake for blower system to be mounted to minimize the intake of snow, ice, and other airborne contaminants.

13.1.5 An operator controlled blower drive disconnect shall be installed to permit broom functions without the blower and also permit the blower functions without the broom.

13.1.6 Location: To reduce noise level in the operator's station, mounting of the air blower directly behind the cab is not acceptable.

13.2 Nozzles:

13.2.1 The blower nozzles' control shall be directional, left, right, or off, and interlocked with the broom head angle to always blow in the direction of broom casting.

13.2.2 To include a hydraulic system for raising the nozzles for transport, from inside the cab, shall be provided. Nozzles, when raised, are not to extend past the tire's outside width.

13.2.3 Minimum air velocity rated at each outlet nozzle to be minimum 350 MPH, measured at a distance of 12 inches from nozzle outlet exterior while broom is under load.

13.2.4 (*) Velocity requirement must be certified by an independent test facility and submitted with bid. Testing must be done at outlet nozzle as per above.

Reference certification from Dillett in bid file. M-B broom produces 22,800 CFM at 450 MPH.

13.2.5 Nozzles shall be positioned so that service brakes do not ingest sufficient snow to become ineffective.

14.0 QUICK ATTACH HITCH SYSTEM (PART OF CHASSIS) (*For snow blower head and runway broom when required*):

14.1 Both the snow blower head and the runway broom assembly are to mount onto the front of the carrier by means of a quick attach hitch system by a one (1) person operation.

14.2 Carrier:

14.2.1 Shall allow mounting of any of the attachments being provided with this unit.

14.2.2 To provide a parallel lift.

14.2.3 Activated by two (2) each double acting cylinders, controlled from the operator's position in the cab.

14.2.4 All bearing surfaces shall be equipped with grease fittings.

14.3 Heads (Snow Blower and Runway Broom):

14.3.1 Shall include two (2) each flame cut curved arms that will hook into the upper receptacle of truck hitch.

14.3.2 Locking pins, manually installed, to be provided to hold head in relative position with vehicle.

14.3.3 Mating, except for locking, shall be accomplished hydraulically by controls from inside the cab.

14.4 Changing of Attachments:

14.4.1 In order to keep time at a minimum from changing from snow blower to runway broom or visa-versa, a maximum of 30 minutes is allowed to perform this task by one person that is familiar with the system.

14.4.1.1 *Testing of changing from each unit to the other will be performed by the manufacturer during the pilot inspection.*

14.4.2 Drive shafts are to be equipped with a quick connect coupling (keyed flange with swing bolt, or equivalent.

14.4.3 The drop box shall not require removal of snow blower head drivelines while sweeper head is attached and operating. Appropriate warning tags are required, if necessary.

14.4.4 Multi-Coupling Plate:

14.4.4.1 The multi-coupling plate is a tool allowing the simultaneous couple and uncouple of the hydraulic lines used for all plow hydraulic functions.

14.4.4.2 A vented coupler manifold is to be used to release residual pressure prior to disconnecting hydraulic quick-couplers.

14.4.4.2.1 It shall also allow for displacement of fluid in the lines during connection.

14.4.4.2.2 No more than six (6) hydraulic connections are to be made with each manifold. If more than six (6) lines need to be connected, additional manifolds are to be used (or a Multi-Coupling Plate) on all hydraulic lines that need to be separated from carrier when an attachment is removed.

14.4.4.3 (*) To be *STUCCHI*. Multi-coupling plate will be Stucci.

14.4.4.4 *STUCCHI* is available through *COMPONENT TECHNOLOGY*, contact Steve Lovercheck at (402)349-0900 or (800)333-7411.

14.4.4.5 To include quick coupler caps or plugs with cable or chain type retainer regardless of system used.

15.0 PLOW HITCH – CHASSIS SIDE (***When ordered as dedicated runway and ramp plow truck***):

15.1 Must be capable of handling both the 18 foot and the 24 foot plows.

15.2 Both plow assemblies are to mount onto the front of the carrier by means of a quick attach hitch system by a one (1) person operation in not more than five (5) minutes.

15.2.1 Attachment to the front driving axle housing will not be acceptable.

15.3 The chassis side is to consist of a DIN plate type quick hitch.

15.3.1 It shall be attached to the carrier using two (2) each ½ (0.5) inch thick side (cheek) plates bolted to the carrier's frame extension using 5/8 (0.625) inch grade 8 hardware.

15.3.2 The push plate shall incorporating two (2) each top mounting pockets to accept the mating portion of the attachment as well as hydraulically operated pins that positively lock the plow side to the chassis side of the hitch.

15.3.3 The lock pins are to be activated from the operator's position in the cab.

15.3.4 Lifting mechanism to be located on the plow side of the hitch.

15.3.5 Coupling and uncoupling attachments to be accomplished without the use of tools.

15.4 Shall allow mounting of any of the attachments being provided with this unit.

16.0 24-FOOT REVERSIBLE AIRPORT RUNWAY PLOW WITH FOLDING MOLDBOARD ENDS (*When ordered as dedicated runway and ramp plow truck*):

16.1 Provide manufacturer's product brochure with bid package.

16.2 This specification describes a Power Reversible / Folding Moldboard End Plow with a tapered style flared discharge and polymer moldboard, manufactured expressly for airport runway high speed and non-angled ramp plowing work under extreme conditions of snow removal.

16.3 (*) The folding moldboard end plow shall have a total overall cutting edge width of not less than 24 feet. The plow shall be constructed of one (1) each 10 foot center section and two (2) each hinged extensions left and right of seven (7) foot each.

Cutting edge of 24 feet consisting of one 10 ft center section and two hinged extensions left and right of 7 ft each.

16.4 Seams at hinge points shall be sealed against plowed snow passing through the seam areas.

16.5 (*) The 10 foot center section shall have a height of approximately 50 inches high. 10 foot center section is 56 inches high.

16.6 (*) The height at the discharge ends shall have a height of approximately 68 inches. The height at discharge is 72 inches.

16.7 (*) The moldboard width in the fully opened position shall be approximately 26 foot at the wings. The moldboard is 26 feet from end to end.

16.8 (*) The overall width of the plow in the folded travel position (wings retracted) shall be no greater than 16 foot. The overall width in the folding position is 15 ft. 2 in.

16.9 Left and right extensions shall be hinged top and bottom to the center section and shall have suitable graduated curvature from inboard to outboard providing lift, cast and dispersion of plowed snow.

16.10 (*) The moldboard attack angle shall be between 65 and 85 degrees.

Moldboard attach angle is 65 degrees.

16.11 (*) The moldboard shall overhang the cutting edge by a minimum of eight (8) inches at the center. Moldboard overhang is 8 inches.

16.12 In order to offer a low coefficient of friction and resistance to both corrosion and impact, the moldboard sheet shall be formed from 3/8 (0.375) inch thick VHMW polyethylene sheet.

16.12.1 The sheet shall be formed from a polyethylene material that is made from new resin (recycled material is not acceptable), and shall be color impregnated and ultra violet stabilized to a safety YELLOW pigmentation for best visibility in snow removal operations. Welding of sheet is not allowed.

16.13 Moldboard Reinforcement:

16.13.1 Shall include a full-length heavy-duty angle across the top front of the steel shell and 16 vertical ribs tying the upper shell to the cutting edge mounting angle and its reinforcement.

16.13.2 There shall be six (6) ribs in the center section and five (5) ribs at the end of each flared end of the plow.

16.13.3 The 16 steel vertical ribs shall be made from 3/8 (0.375) inch thick plate and have a varying cross section, becoming wider as they approach the cutting edge mounting angle.

16.13.4 Cutting edge angle shall be reinforced with a boxed section that also serves as a mounting point for the moldboard hinges and folding cylinders.

16.13.5 There shall be no span between reinforcing ribs in excess of 3 ½ (3.5) feet.

16.14 The vertical ribs shall provide support and frame work for a series of window openings in the rear steel moldboard backing frame, tying top reinforcement to the bottom reinforcement.

16.14.1 Window opening design shall provide long term, stable backing support for the moldboard, and help prevent moisture buildup behind the polymer plow face.

16.14.2 The polymer moldboard shall be bolted to this durable framework for maintenance of proper snow handling shape.

16.14.3 Moldboard shall consist of three (3) separate polyethylene sheets, one (1) for the center section and one (1) for each flared end of the plow.

16.14.4 Polyethylene to be retained by 5/8 (0.625) inch diameter carriage bolts with locking hardware to avoid loss on the operations area of the airfield.

16.15 Means of cutting edge angle adjustment shall be approximately vertical (90 degree cutting edge attack angle).

16.15.1 This can be accomplished without the use of adaptor plates.

16.16 Folding Mechanism:

16.16.1 The moldboard shall have folding capabilities when swung to the bulldoze position.

16.16.1.1 Hydraulic cylinders with a minimum bore of five (5) inches shall retract each flared end of the moldboard so the plow and chassis can be driven through a narrow door.

16.16.1.2 The folding mechanism and cylinders shall be independent of the plow swing and lift system. Thus the entire folding mechanism must be part of the moldboard / push frame.

16.16.2 Counterbalance valves shall protect the plow and cylinders from damage if an obstacle is encountered by the end sections.

16.16.2.1 When folded, the width of the plow shall not exceed 16 feet, including the rubber spray guard.

16.16.2.2 Proximity sensors on the swing frame will not allow the plow to fold unless in the bulldoze position.

16.16.2.3 There shall also be an electrical locking system not allowing the plow to swing in the folded or partially folded position.

16.16.3 The moldboard hinges shall utilized two (2) inch diameter pins and spherical bearings for maximum load capacity and longevity.

16.16.4 Gussets between the bearing housings and moldboard push frame shall be provided to distribute the load evenly.

16.17 Spray Guard/Deflector:

16.17.1 A spray guard/deflector shall bolt to the top discharge point at the moldboard flange or reinforcement, tangential to the upper radius of the modified “J” style moldboard to direct snow forward, down, and toward the trailing edge of the plow.

16.17.2 It shall consist of a heavy-duty rubber belting that is 0.40 inch thick x 12 inches wide, and shall include a metal retaining strap, ¼ (0.25) inch thick x two (2) inches wide, with necessary mounting hardware.

16.17.3 The hardware shall be of the locking type to minimize opportunity for loss on the aircraft operating areas of the airport.

16.17.4 Provisions shall be provided in the mounting system to adjust the spray guard perpendicular to the moldboard on a case by case basis as desired by the airport for seasonal variation in operations.

16.18 Adjustable Pneumatic Single Caster Wheel Assembly:

16.18.1 There shall be two (2) single tire and wheel assemblies with one (1) assembly mounted to each folded part of the plow. Casters shall be capable of swiveling 360 degrees.

16.18.2 Each caster strut assembly shall be equipped with a spring loaded adjustable brake dampener so to minimize wheel wobble.

16.18.3 Tires shall be shall be pneumatic 180/70R8, 16 ply rating and delivered with appropriate air pressure.

16.18.4 Wheels shall be eight (8) inch diameter x 4.33 inch wide minimum.

16.18.4.1 They shall ride on hubs fitted with *TIMKEN* tapered roller bearings.

16.18.4.2 Each bearing shall include seal, lubrication fitting and pressure relief plug.

16.18.4.3 Axles shall be a minimum of 1-5/8 (1.625) inches in diameter.

16.18.4.4 Each caster spindle shall have a rating of no less than 3000 pounds.

16.18.5 Wheel, tire, and axle assembly shall be easily removed from the caster fork.

16.18.6 Caster wheels shall be of a sufficient rating to support a portion of the weight of the plow at operating speeds since a weight transfer system will support the remaining weight of the plow during use.

16.18.7 Casters shall be designed to rotate in conjunction with plow at any given angle.

16.18.8 Two (2) piece bolt-together rims are not acceptable.

16.18.9 **SPARES:** To include two (2) each, complete caster wheel assemblies ready for installation. Assemblies are to be completely assembled and include tires, wheels, hubs, bearings, seals, axle and mounting hardware.

16.19 Cutting Edge:

16.19.1 Overall length, with folding wings, 24 feet.

16.19.2 To be bolt-on, reversible, rubber (crumb rubber is not acceptable), two (2) inches thick x 12 inches deep with adjustable slot height or multiple holes for position adjustment.

16.19.3 For ease of installation and handling, to be single pieces with beveled steel retaining strap that is ½ (0.5) inch thick x 2½ (2.5) inches wide.

16.19.4 Punching: AASHTO with spacing of (3-3-12-12- . . . . . -12-12-3-3) on the center section and on the batwing sections.

16.20 Folding Cylinders:

16.20.1 Hydraulic folding cylinders to be five (5) inch diameter minimum.

16.20.2 The folding cylinders of the double acting type shall be pinned to the center section.

16.20.3 Hydraulic cylinder rods are to be nitrided.

16.21 See the Hydraulic section for controls and connections.

16.22 Hitch:

16.22.1 Hitch shall be capable of withstanding the longitudinal and lateral forces encountered during high speed runway plowing and when pushing heavy snow (in a bulldoze position) in ramp areas.

16.22.2 The moldboard center section shall be attached to and be pushed from the lower plow hitch assembly.

16.22.3 The hitch shall be custom designed to offer parallel lifting of the plow assembly.

16.22.4 The hitch shall be completely mounted to the truck front frame extension and be constructed of a minimum of ½ (0.5) inch thick steel plate.

16.22.5 The minimum rated capacity of the hitch shall be 8,600 pounds.

16.22.6 The lower plow hitch shall be constructed of heavy-duty reinforced steel with a heavy-duty oscillation system.

16.22.7 The moldboard angle (swing) cylinders shall be well anchored and be double-acting, located within the plow side of the hitch.

16.22.8 These cylinders shall be a minimum of four (4) inches inside diameter and be the double acting type.

16.22.9 The hitch lift mechanism (used to assist in connecting and removing attachments) shall be a parallel arm hitch with a weight transfer design utilizing a double acting five (5) inch inside diameter cylinder.

16.22.9.1 It shall mount and dismount by means of a chassis mating DIN plate hitch.

16.22.9.2 It shall have provisions to allow hydraulically operated locking pins on the chassis side of the hitch to connect the plow and chassis sides together.

16.22.9.3 It shall also incorporate two (2) each steel claws which mate with pockets in the chassis side of the hitch.

16.22.9.4 The weight transfer system is important because it prevents the carrier front axle from being overloaded when the plow is raised and ensures that sufficient weight is on the carrier front axle for steering control when the plow is down.

16.22.9.5 The hitch shall be capable of providing 12 inches minimum ground clearance between the ground and cutting edge during transport.

16.22.9.6 A chain type lifting method will not be acceptable.

16.22.10 All moveable points of the lift mechanism and plow shall be furnished with greaseable fittings.

16.22.11 The plow swing system of the hitch shall be equipped with two (2) each hydraulic cylinders enabling the plow to be angled left, right, or straight ahead.

16.22.12 Minimum angle to the left or right shall be 32 degrees.

16.22.13 The hydraulic cylinders shall be heavy-duty to allow for heavy snow plowing under severe conditions and shall be equipped with a double acting hydraulic cushion valve mounted on the plow to protect the cylinders from damage.

16.22.13.1 All hydraulic cylinder rods are to be nitrided.

16.22.14 Bolts or pins used connecting the cylinder to the plow shall be minimum one (1) inch in diameter.

16.22.15 Swing pin (center and vertical) used in the connection of the hitch to the plow shall be two (2) inches in diameter x 31 inches in length, minimum.

16.22.16 Replaceable bronze wear bushings shall be used at swing pin locations to prevent wear on plow connections.

16.22.17 The plow oscillation system of the hitch shall incorporate a drive frame that allows oscillation of the plow with respect to the chassis in order to follow the pavement contour.

16.22.18 The plow shall oscillate a minimum of two (2) degrees overall.

16.22.19 When the plow is carried in the raised position and angled right or left, the plow shall remain approximately level to the pavement.

16.22.20 To include two (2) each rubber cushions bolted to the plow frame to limit and cushion the end of oscillation travel.

16.22.21 It is required that, when the plow is lifted and carried in a transport position, whether in a left angle, right angle, or straight ahead position, that the plow shall remain parallel to the ground. This shall be accomplished without having any additional assistance from ground personnel or mechanical function other than normal plow functions from the reversing and lift cylinders.

16.23 Paint:

16.23.1 Color of the plow to be flat black. The poly moldboard is not to be painted.

16.23.2 To be cleaned of all contamination and mill scale by media blasting.

16.23.3 To be then primed and painted, minimum of 3.5 mils, with urethane product to manufacturer's recommendations or powder coated.

16.24 All grease fittings are to be a threaded zerk. Press-in type zerks are not acceptable.

17.0 18 FOOT RAMP PLOW (***When ordered as dedicated runway and ramp plow truck***):

17.1 Provide manufacturer's product brochure with bid package.

17.2 (*) This plow is to be the dozer type with cutting edge length of 18 feet with permanently mounted or detachable wings. To be a *MONROE TRUCK EQUIPMENT* Model Snowbully or *OSHKOSH TRUCK* Heavy-Duty Ramp Plow or *SCHMIDT WAUSAU* Model RP18, provided the following minimum specifications are met. Monroe Snowbully will be provided.

17.3 Moldboard:

17.3.1 Shall have a minimum height of 56 inches.

17.3.2 Thickness to be 3/16 (0.1875) inch, minimum.

17.4 End Gates:

17.4.1 May be detachable or permanently mounted.

17.4.2 Thickness to be 5/8 (0.625) inch, minimum.

17.4.3 To include full length replaceable skid shoes fabricated with **carbide** wear inserts for durability.

17.4.3.1 Shoes to include turned up design at front and rear.

17.4.3.2 To be adjustable to compensate for wear.

17.5 Cutting Edge:

17.5.1 Overall length, 18 feet.

17.5.2 To be bolt-on, reversible, rubber (crumb rubber is not acceptable), two (2) inches thick x 12 inches deep with adjustable slot height or multiple holes for position adjustment.

17.5.3 For ease of installation and handling, to be three (3) piece maximum on center with single pieces on wings with beveled steel retaining strap that is ½ (0.5) inch thick x 2½ (2.5) inches wide.

17.5.4 Punching: AASHTO with spacing of (3-3-12-12- . . . . . -12-12-3-3) on the center section and on the folding wing sections.

17.6 Hitch:

17.6.1 Hitch shall be capable of withstanding the longitudinal and lateral forces encountered during plowing and when pushing heavy snow in ramp areas.

17.6.2 The operator is to be able to drive up to the plow, dismount, hook up the STUCCHI plate, mount, and position hitch height, engage plow to carrier and lock pins.

17.7 Paint:

17.7.1 The front of the moldboard is to be painted yellow, matching the carrier.

17.7.2 The back of the plow and hitch are to be painted flat black.

17.7.3 To be cleaned of all contamination and mill scale by media blasting.

17.7.4 To be then primed and painted, minimum of 3.5 mils, with urethane product to manufacturer's recommendations or powder coated.

17.8 All grease fittings are to be a threaded zerk. Press-in type zerks are not acceptable.

17.9 See the Hydraulic section for controls.

18.0 BALLAST BLOCKS (***When ordered as dedicated runway and ramp plow truck***):

18.1 Ballast blocks providing a total weight of approximately 13,000 pounds shall be furnished.

18.1.1 Weight includes subframe.

18.2 Two (2) each shall be located between the cab and rear mounted engine to maximize tractive effort.

18.3 Each ballast block shall be fabricated from a heavy-duty polyethylene tank filled with concrete.

18.3.1 A lift eye shall be imbedded into the concrete to allow the weights to be removed if necessary.

18.3.2 The lift eye shall be concealed by the tank's cover after installation.

18.3.3 Each tank shall be approximately 68 inch long and 38 inches in diameter and weigh a minimum of 6,000 pounds each.

18.4 The concrete filled tanks shall be secured to the sub-frame with steel hoops over the polyethylene tank.

18.4.1 The sub-frame shall be attached to the chassis frame with clamps that extend from the sub-frame rails to the underside of the chassis frame.

18.4.2 Placement of the ballast shall be made to maximize axle weights in the plow down condition without exceeding the front axle ratings in the plow up or the rear axle ratings with the plow down.

19.0 VHF RADIO:

19.1 To be an *ICOM* Model IC-A110 VHF (AM) aeronautical band, complete with microphone, speaker, external transmit/receive antenna mounted on cab, and to include frequency(s) if listed on the Purchase Order.

19.2 Installation:

19.2.1 To include noise canceling microphone, external speaker (for inside cab), and cab mounted external antenna.

19.2.2 Speakers shall be mounted in cab so the operator can hear with engine running at full power.

19.2.3 Main unit to be shock mounted.

19.2.4 Installation to be performed by holder of a current FCC Radio Telephone license (copy of certification to be provided with delivery of unit).

19.3 Optional Headset:

19.3.1 Listen only headset, *PELTOR* Model 7050 or Model HTM7A-02.

19.3.2 When requested, the VHF radio must be equipped with an easy accessed and labeled, headset jack. The speakers described above would still be required so that unit could be used with or without the listen only headset.

20.0 DIMENSIONS:

20.1 (*) Overall height (not including spot casting/loading chute), 144 inches (12 foot), maximum. Highest point may be exhaust.

From ground to top of strobe light is 141 inches.

20.1.1 Also refer to Spot Casting/Loading Chute height limitation.

20.2 (*) Overall transport width, without broom or air chutes, 102 inches (8 foot 6 inches) maximum. 102 inch blower head.

20.3 (*) Transport width, with broom angled, 214 inches (17 foot 10 inches) maximum.

Maximum transport width will be 212 inches.

20.4 (*) Overall length, with broom angled, 497 inches (41 foot 5 inches) maximum.

Overall length will be 455 inches.

20.5 (*) Turning diameter, outside wall to wall, utilizing 4-wheel steer and with broom angled 65 feet maximum.

Wall to wall turning diameter with broom angles is 1 ft 6 inches, see enclosed turning circle.

21.0 WEIGHT AND BALANCE:

21.1 (*) Balance: Unit must be able to stop transversely on a 30 percent grade with no danger of overturning. This requirement must be certified by factory and submitted with bid. Reference Oshkosh letter in bid file.

21.2 (*) Gross Weight, with **Broom** attachment in carry/transport position.

Gross weight with broom, Lot #2i & 2p: 37,600#, Lot 2x: 40,480#

21.3 (*) Gross Weight, with **Blower** attachment in carry/transport position.

37,000# without spot cast / 39,000# with spot cast.

21.4 (*) Weight on Front Axle: With **Broom** attachment in carry/transport position.

Weight on front axle with broom, Lot 2i & 2p: 22,850W, Lot 2x: 21,290#

21.5 (*) Weight on Front Axle: With **Blower** attachment in carry/transport position.

Weight on front axle with blower in transport position: 26,860#

21.6 (*) Weight on Rear Axle: With **Broom** attachment in carry/transport position.

Rear axle weight with broom, Lot 2i & 2p: 12,150#, Lot 2x: 15,590#

21.7 (*) Weight on Rear Axle: With **Blower** attachment in carry/transport position.

Weight on rear axle with blower attachment in transport position: 11,260#

21.8 (*) Weight on Front Axle: With **24 Foot Runway Plow** attachment in carry/transport position with blade angled.

Weight on front axle 26,688# with plow in transport position.

21.9 (*) Weight on Rear Axle: With **24 Foot Runway Plow** attachment in carry/transport position with blade angled.

Weight on rear axle 17,886# with plow in transport position.

21.10 Weight Scale Verification Slips:

21.10.1 Required not later than time of delivery (when applicable).

21.10.2 Separate total weight of carrier with blower and air system.

21.10.3 Separate total weight of carrier with broom and air system.

21.10.4 Separate weight on the carrier's front tires with the snow blower in transport position.

21.10.5 Separate weight on the carrier's front tires with the broom in the transport position.

21.10.6 Also refer to Section III – Special Terms and Conditions.

22.0 TRAINING (*OPTIONAL– Refer to Section III –Price Schedule*):

22.1 The vendor shall provide a factory certified instructor(s) within 30 days of acceptance by the State. This (these) representative(s) shall be prepared and qualified to make all necessary adjustments to the unit and give instruction to the operators to assure correct operation of the unit when it is placed in service.

22.1.1 Please give advance notice to the appropriate– State Equipment District Manager:

Dave Bryson, South Central, in Anchorage at phone #907-269-5935

Dee Linton, Southwestern, in Anchorage at phone #907-269-5971

Tom Victorino, North Central in Fairbanks at phone #907-451-2264

Bobby Pace, Northwestern, in Fairbanks at phone #907-451-5219

Ken McBride, Southeastern, in Juneau at phone #907-465-1792

22.2 Total of 16 hours at the location as noted in each individual Lot Item, Section III – Price Schedule.

22.2.1 Travel labor will only be reimbursed for travel from Anchorage, Fairbanks, or Juneau to the 'Assigned Location' as per Section III – Price Schedule. Travel labor will only be reimbursed for the time the employee is traveling within Alaska.

22.2.1.1 Mileage charge, as per Section III –Price Schedule, will only be reimbursed for travel within Alaska.

22.2.1.2 Meals are paid at actual and charges must be accompanied by receipts and are not to exceed the State authorized $42.00 per day. Meals are only paid for time in Alaska.

22.2.1.3 Transportation, such as airfare (coach), shall be reimbursed at actual and all charges are to be accompanied by a receipt/copy of the ticket. Transportation will only be paid for transportation within Alaska.

22.2.1.4 Lodging shall be reimbursed at actual and shall not exceed $100.00 per night unless no other lodging is available. Requests for reimbursement must be accompanied by a receipt. Lodging will only be paid for lodging within Alaska.

22.3 To include a minimum of eight (8) hours of operator training including the following, as a minimum applicable agenda:

22.3.1 Operating procedures per operating manual.

22.3.2 Break-in procedures.

22.3.3 Equipment limitations.

22.3.4 Operator maintenance.

22.3.5 Before operations checks and lubrication.

22.3.6 Safety.

22.3.7 Cold weather operations.

22.3.8 Jump starting.

22.3.9 Welding on equipment.

22.3.10 Towing or transporting equipment.

22.3.11 Instruments and controls.

22.3.12 Gauge interpretation.

22.3.13 Equipment operation, Do's and Don'ts.

22.3.14 Attachment operation, Do's and Don'ts.

22.4 To include a minimum of eight (8) hours of mechanics (Journeyman level) training including the following theory, trouble shooting, and test procedures for, as a minimum applicable agenda:

22.4.1 Electronics.

22.4.2 Electrical.

22.4.3 Hydraulics.

22.4.4 Air system.

22.4.5 Drive train.

22.4.6 Engine and transmission electronics.

23.0 MISCELLANEOUS:

23.1 Paint:

23.1.1 Lead free.

23.1.2 Color to be manufacture's standard yellow.

23.1.3 To include sandblasting and three (3) mils of appropriate primer, including frame and wheels.

23.1.4 Metal portions of all snow heads (including casting shoot, if ordered) facing the operator shall be flat black to minimize glare.

23.1.5 The inside of the engine housing is to be painted a gloss yellow or white.

23.2 Easy access to all maintenance components shall be provided for items such as air cleaners, batteries, radiator fill and drain, oil filters, oil drain (hydraulic and engine), generator, etc.

23.3 Winterization: Entire unit to be winterized to provide satisfactory performance in temperatures to minus 40 degrees Fahrenheit. Antifreeze to be of permanent type only providing protection to minus 60 degrees Fahrenheit.

23.4 Fire Extinguishers:

23.4.1 To have two (2) each five (5) pound Halotron, or equivalent, units easily accessible to operator. One (1) in cab, and one (1) exterior of cab.

23.4.2 Mounting location will be determined at time of pilot inspection.

23.5 Warranty: To be a five-year (60 month), full 100 percent, per Section III - Special Terms and Conditions.

23.5.1 Attachments are to have the same warranty coverage as the host unit except the VHF radio, which will have manufacture's standard warranty.

23.6 **Publications (*OPTIONAL –Refer to Section III –Price Schedule*)**:

23.6.1 The contractor may be required to supply samples of parts and service manuals.

23.6.2 Refer to Section III – Special Terms and Conditions for further requirements.

23.7 Hydraulic tubes, hoses and fittings used shall conform to SAE J514, J516, J517 and J524. A minimum number of fittings, joints and connections shall be used to prevent excessive backpressure, vibration and leakage. Hydraulic lines shall be of sufficient size to permit free flow of hydraulic fluid at temperatures down to minus 40 degrees Fahrenheit.

23.7.1 (*) A letter of certification/approval from the manufacturer of the hydrostatic drive system components for chassis and rotary head shall be included in the bid package.

23.8 Filters: All elements where applicable to be spin on type and be easily accessible.

23.9 Component Sourcing:

23.9.1 Due to critical nature of vehicle mission and parts support, only current production componentry shall be supplied.

23.9.2 (*) The contractor shall provide assurance that only unused, newly manufactured components are supplied. Reference letter in bid file.

23.9.3 (*) In the bid package, the contractor and/or vehicle manufacturer shall certify that the engine(s), automatic transmission(s), transfer case, and axles to be supplied will be newly manufactured and purchased directly from the original component manufacturer or their authorized OEM distributor.

Reference letter in bid file.

23.9.4 Upon the request of the purchaser, the contractor shall provide copies of purchase orders and invoices properly dated after bid award to verify the source and newness of these components.

23.9.5 Purchase orders and invoices shall reference the component manufacturer, manufacturer's model and/or part number, and the contractor's and/or vehicle manufacturer's name and part number.

23.9.6 In the event any of these components are manufactured by either the contractor or vehicle manufacturer, documentation shall be provided indicating manufacture date and chassis installation date by serial number.

23.9.7 Failure to provide appropriate documentation of component sourcing shall be considered cause for rejecting the delivered vehicle. The burden of proof shall lay with the contractor.

23.10 Manufacturer/supplier stability:

23.10.1 (*) In the interest of continued and reliable service, parts, and technical support, equipment suppliers shall provide, with the bid package, a users list of model being bid that have been delivered, as new, within the past

two (2) years. This users list is to include the following current information on a minimum of five (5) units: Reference letter in bid file.

23.10.1.1 **No. 1 – Model and serial number.**

23.10.1.2 No. 1.- Date delivered.

23.10.1.3 No. 1 – Company, or agency name.

23.10.1.4 No. 1 - Address.

23.10.1.5 No. 1 - Contact name.

23.10.1.6 No. 1 - Phone number.

23.10.1.7 **No. 2 – Model and serial number.**

23.10.1.8 No. 2.- Date delivered.

23.10.1.9 No. 2 – Company, or agency name.

23.10.1.10 No. 2 - Address.

23.10.1.11 No. 2- Contact name.

23.10.1.12 No. 2- Phone number.

23.10.1.13 **No. 3– Model and serial number.**

23.10.1.14 No. 3- Date delivered.

23.10.1.15 No. 3– Company, or agency name.

23.10.1.16 No. 3- Address.

23.10.1.17 No. 3- Contact name.

23.10.1.18 No. 3 Phone number.

23.10.1.19 **No. 4– Model and serial number.**

23.10.1.20 No. 4- Date delivered.

23.10.1.21 No. 4– Company, or agency name.

23.10.1.22 No. 4- Address.

23.10.1.23 No. 4- Contact name.

23.10.1.24 No. 4- Phone number.

23.10.1.25 **No. 5– Model and serial number.**

23.10.1.26 No. 5- Date delivered.

23.10.1.27 No. 5– Company, or agency name.

23.10.1.28 No. 5- Address.

23.10.1.29 No. 5- Contact name.

23.10.1.30 No. 5- Phone number.

23.11 (*) The contractor will be required to post a performance bond prior to award, per Section II - Special Terms and Conditions. Reference bid file.

23.12 (*) Have documentation provided in the bid package to verify such continuous business activity, such as location and contact lists, financial statements, and annual reports. Reference contact list and financial information in bid file.

23.13 Local Support:

23.13.1 (*) Because of the critical nature of use for this equipment, service and technical support are considered an integral part of its purchase. Therefore, contractors must be authorized dealers of the vehicle proposed, with service facilities in Anchorage and Fairbanks at a minimum.

Yukon Equipment is an authorized dealer for Oshkosh, Monroe and M-B Co. and has service facilities in Anchorage and Fairbanks.

23.13.2 The local service facilities must be capable of servicing the entire unit including the chassis, and any auxiliary equipment provided thereon.

23.13.3 (*) The contractor must include verification that the local maintenance facility and staff are factory trained to provide the service and technical support, and have experience on similar units.

Reference letter and documentation in bid file.

23.13.4 Prior to award, the State reserves the right to inspect the contractor's local maintenance facility and request documentation on training and experience.

24.0 PERFORMANCE TESTING (SNOW BLOWER):

24.1 Testing Requirements:

24.1.1 Tests may be conducted to pre-qualify unit's capability to meet performance requirements.

24.1.2 Performance testing may be conducted in accordance with the procedures and requirements of this section.

24.2 Performance Requirements:

24.2.1 Capacity:

24.2.1.1 The minimum **525 HP** blower engine version is to produce a minimum **4,000 TPH** while casting to 50 feet, minimum. When operating in snow having a density between 30 and 40 pounds per cubic foot (PCF), the snow removal unit shall cast snow at an average required tons per hour (TPH) through a distance of not less than 50 feet, and at 75 percent required TPH capacity through a distance of not less than 75 feet.

24.2.1.2 The minimum **650 HP** blower engine version is to produce a minimum **5,000 TPH** while casting to 50 feet, minimum. When operating in snow having a density between 30 and 40 pounds per cubic foot (PCF), the snow removal unit shall cast snow at an average required tons per hour (TPH) through a distance of not less than 50 feet, and at 75 percent required TPH capacity through a distance of not less than 75 feet.

24.2.2 Casting:

24.2.2.1 Variable casting from 20 to 75 feet. Casting performance shall be attained under a no wind condition, both left and right of unit.

24.2.3 Clearing:

24.2.3.1 The snow removal unit shall clear a swath of not less than eight (8) foot wide in one (1) pass, while operating in snow ranging in depth from 1½ (1.5) inches to four (4) feet, not leaving any snow more than ½ (0.5) inch deep under head.

24.2.3.2 Unit traveling at designated MPH (refer to next paragraph) will leave no spillage of snow greater than ½ (0.5) inch in depth under the head of unit or greater than average ½ (0.5) inch in depth, and/or 18 inches in width to the left or right sides of unit when blowing a berm of snow. Casting to a minimum of 50 feet; snow density, 20 to 40 PCF. Refer to test procedure on Clearing Test Procedure later in this specification.

24.2.3.3 Required machine travel speed will be adjusted to compensate for density and cross section quantity so as not to exceed the required TPH capacity.

24.2.4 Speed and Gradeability:

24.2.4.1 (*) The fully equipped snow removal unit, loaded to rated GVW and with snow blower head in transport position, shall be capable of maintaining a continuous forward speed of not less than 45 MPH on dry level pavement and negotiating a five (5) percent dry, smooth, paved grade at 40 MPH.

Reference scanned documentation in bid file.

24.3 Snow blower Testing Procedures:

24.3.1 Purpose:

24.3.1.1 The purpose of these testing procedures is to determine the actual snow removal capacity, clearing capabilities, and casting distance of different makes and models of rotary snow blowers. These tests also provide a basis for determining the length of time required to complete a given snow removal task.

24.3.2 The snow blower should be at the manufacturer's recommended operating temperature and the operator should be totally familiar with the snow blower and be advised of the operating procedure to be used for the specific test.

24.3.3 Test Measurements:

24.3.3.1 Windrows should be measured for cross-sectional area at 100-foot intervals, and at the beginning and end of the test run. Each test run should be 500 feet.

24.3.3.2 Snow density tests should be taken at all locations where the cross-sectional measurements are taken. Three (3) samples of snow should be taken at each location with a soil conservation

service-coring tool the full depth of the snow berm. Average the three (3) densities obtained from these samples.

24.3.3.3 Measure the ambient temperature.

24.3.3.4 Measure the shear strength. The average shear strength should be measured with a *RAMSONDE* penetrometer for the full depth of the windrow.

24.3.3.5 To determine the casting distance, measure the distance from the longitudinal centerline of the snow removal unit to the center of mass within the perimeter of the cast pattern.

24.3.3.6 Snow condition:

24.3.3.6.1 For a valid test, the average snow density is to be between 30 and 40 PCF (pounds per cubic foot).

24.3.4 Capacity Test Run:

24.3.4.1 The snow blower should be run over the prescribed course in accordance with the manufacturer's recommended procedure for obtaining the maximum capacity for the prescribed casting distance. A series of three (3) test runs should be performed and the capacity and casting distance for each run averaged.

24.3.4.2 Site Preparation:

24.3.4.2.1 Select a suitable site, preferably flat with a paved surface. Construct a windrow of snow with the following approximate dimensions:

Width (base) = seven (7) feet

Depth (height) = three (3) feet

Length = 500 feet

24.3.4.3 Capacity Calculation:

24.3.4.3.1 The capacity of the snow blower is calculated by using the following formula:

Q = A x L x D x 1.8/t; where Q = capacity

A = average cross-sectional area of the windrow

L = length of test run

D = average density of the snow

t = time of test run measured in seconds

1.8 = a constant

hour = 3,600 seconds

ton = 2,000 pounds

24.3.4.4 Allowances should be given for capacity determinations as the shear strength of the snow exceeds 125 pounds per square foot (PSF). Such allowance will not exceed 50 percent, and will be

based on a straight line (linear) reduction scale between 125 PSF and 600 PSF. No allowance will be given below 125 PSF, and shear strengths greater than 600 PSF will void the test.

24.3.4.4.1 Capacity reduction allowance for shear will be calculated according to the following formula:

average shear - 125 PSF = percentage of reduced capacity allowed

Where 9.5 is a constant, representing the ratio of the spread of shear range (600 PSF minus 125 PSF = 475) and the capacity reduction allowance spread (100% minus 50% = 50%), where 475 divided by 50 = 9.5.

24.3.4.5 Any portion of the test windrow left by the snow blower will be measured. The quantity will be subtracted from the original cross-sectioned volume for determining total volume of snow blown in the capacity test run.

24.3.4.5.1 **Note:** These spillage measurements should be taken at the same location as the windrow cross sections.

24.3.5 Clearing Test Procedures:

24.3.5.1 The following test is to be performed to determine the snow blower's ability to clear snow at 75 percent rated capacity without leaving spillage under or to the side of the snow blower head.

24.3.5.2 The snow blower should be run over the prescribed course in accordance with the manufacturer's recommended procedure for obtaining maximum clearing efficiency for the designated speed required to achieve 75 percent capacity.

24.3.5.3 Construct a berm of snow having the following approximate dimensions:

Length = 500 feet

Width = three (3) feet

Depth = two (2) feet

24.3.5.4 Required machine travel speed will be adjusted to compensate for density and cross section quantity so as not to exceed the required ton per hour at 75 percent capacity.

24.3.5.5 The speed of the clearing run will be determined by stopwatch.

24.3.5.6 A single clearing run which leaves no spillage will qualify a machine. Spillage is defined as more than 1/2" (one-half inch) of snow remaining under the head of the unit and/or snow remaining to the left or right sides of the unit, excluding isolated lumps of snow that have been cast to the side due to speed.

25.0 INSPECTIONS:

25.1 Prior to shipment from the manufacturer's plant, representatives of the State will inspect the **completed unit** for conformance to specifications. The completed unit, component equipment, and accessories shall be inspected and/or tested by the **contractor** for compliance with specifications, **PRIOR** to the arrival of the State inspection team. The State reserves the right to appoint an independent inspector at the State's expense to periodically monitor the progression of the unit during the manufacturing process.

25.1.1 The contractor is to provide the State with a minimum 30 days notice prior to the pilot inspection.

25.2 Prior to the arrival of the State inspection team, **a completed pilot unit**, component equipment, and accessories shall be inspected and/or tested by the contractor for compliance with specifications.

25.3 The contractor shall provide full access to the State inspection team.

25.4 These inspections by the State shall be thorough and very critical, and will encompass a complete review of the specifications. Adequate time and technical personnel shall be made available to assist the State in these inspections.

25.5 The contractor (responsible sales rep) shall also be in attendance.

25.6 Inspection trip costs. The contractor will supply round trip coach ("Y") airfare (not supersaver), with open arrival and departure times, for two (2) inspectors to the manufacturer's facility. Both inspectors will depart from **ANCHORAGE**.

25.6.1 Per diem for each of the two (2) inspectors shall be at a rate of US$120.00 per day each. It is expected that there will be four (4) days (travel day, inspection days, and return travel day).

25.6.2 The successful vendor shall assist by booking lodging reservations. Meals and lodging will be paid by the State inspectors.

25.6.3 Arrange and provide all ground transportation necessary to conduct the inspection for the State inspection team.

25.7 While the State recognizes contractual responsibility in testing, the State reserves the exclusive right to reduce the number of inspectors when and if that action seems prudent. If the number of inspectors is reduced, the Contractor will return to the State all monies saved by that action within thirty (30) days following the actual inspection.

25.8 It shall be the responsibility of the State inspection team to technically inspect and test the unit for compliance with the specifications.

25.9 It shall be the responsibility of the Contracting Authority Representative to observe the inspection and test to assure compliance with the published terms, conditions, and specifications of the bid, and to mediate any disputes, which may arise between the contractor and the Department of Transportation's representatives.

25.10 FINAL ACCEPTANCE REMINDER: Final acceptance is at final destination; however, all major tests will be conducted at the contractor's place of business unless the State has reason to believe alterations or damages have taken place which may have changed the performance or design characteristics of the unit since the time of inspection at the contractor's location.

25.11 A final inspection of the unit will be conducted at FOB point to assure that the unit still meets specifications.

25.11.1 Should the State determine that it is necessary to have the representative of the Contracting Authority attend the delivery inspection due to numerous specification discrepancies that were not corrected per the Pilot Inspection Report, or the vendor requests the representative of the Contracting Authority to attend the delivery inspection, the vendor shall pay round trip coach airfare (not supersaver) from Anchorage to the assigned location and per diem at $120.00 per day.